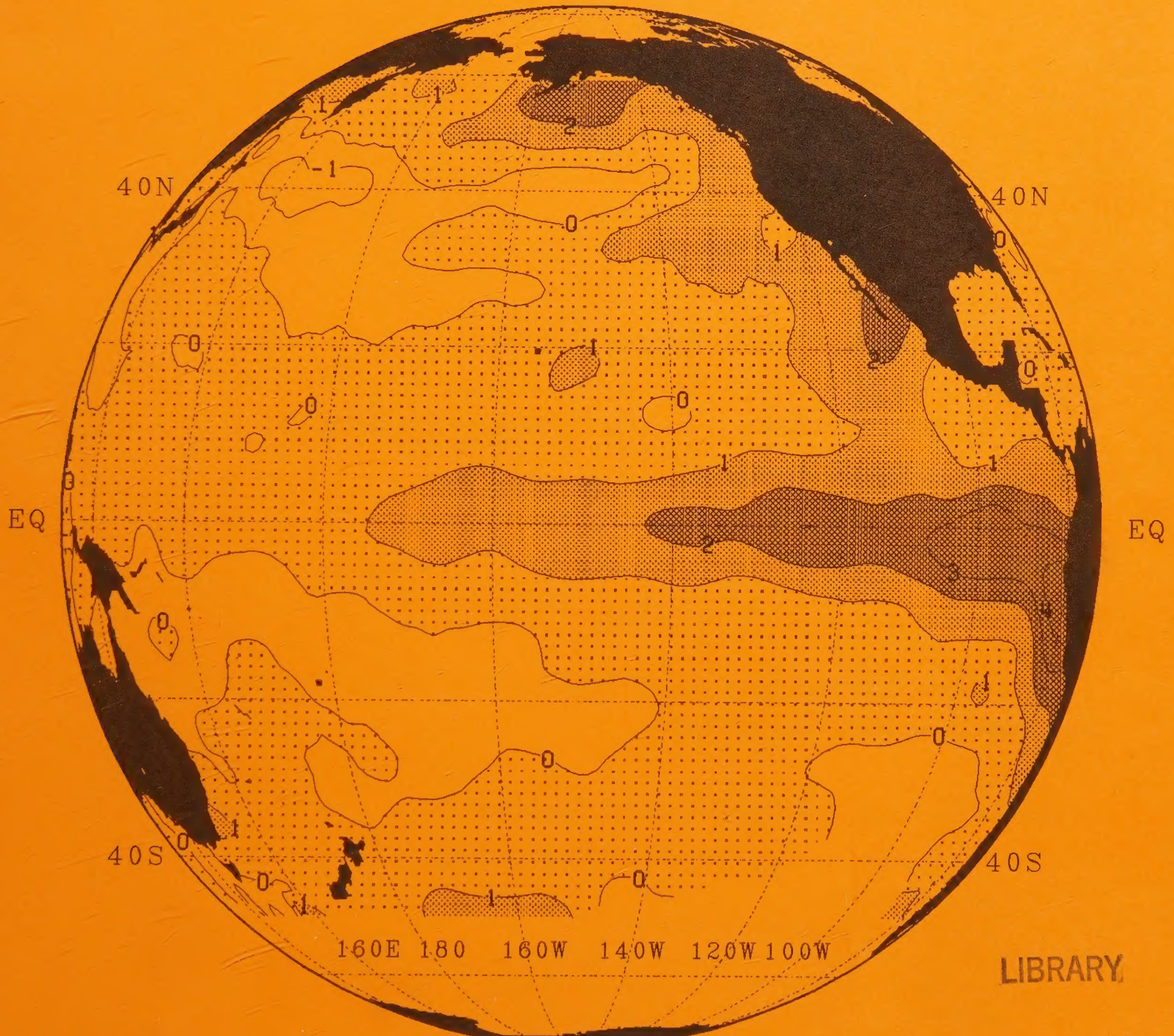
#55

# 気象庁海洋月報

## Monthly Ocean Report

## July 1997 (No. 55)






Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成9年7月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋課で作成されています。

本月報に関する問い合わせは、

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Monthly Ocean Report is prepared by the Oceanographical Division, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、1997年7月の太平洋の月平均海面水温偏差図です。

陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for July 1997 in the Pacific Ocean.

Areas of positive anomalies are shaded.

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# 海況の特徴（１９９７年７月）

### 日本近海の海況

海面水温は，オホーツク海南部と，常磐から東海にかけての沿岸で平年より1℃以上低かった（第4図）。

黒潮は，九州から紀伊半島にかけて接岸した後，東に流れ，八丈島付近を経て房総半島沖を北東に流れていた（第9図）。

本州東方の親潮系の冷水は，沿岸の分枝は37.0゜N,141.9゜Eまで，沖合の分枝は39.0゜N,146.0゜Eまで，それぞれ達していた（第5図）。

### 太平洋の海況

太平洋熱帯域の海面水温は，175゜W以東で平年より1℃以上高く，145゜W以東では2℃以上高かった。また，南米沿岸には+4℃以上の正偏差域も見られた。エルニーニョ監視海域（4゜N～4゜S，150゜W～90゜W）の海面水温の平年偏差は+2.6℃に達した（第1表）。これは，1983年1月（+3.2℃）以来の大きな値である。

北太平洋では，6月に30～40゜N，150゜E～140゜Wにみられた-1℃以下の海面水温の負偏差域は，40゜N，155～175゜E付近で見られるのみとなった。50゜N以北では海面水温が平年より+0.5℃以上高い状態が続いていた。北米沿岸では平年より+1℃以上高く，アラスカ湾及びカリフォルニア半島沖では平年より2℃以上高かった（第16図）。

# Highlights July 1997

### Seas adjacent to Japan

SSTs were more than 1°C below normal in the southern part of the Sea of Okhotsk and in the Pacific coastal area from Joban to Tokai (Fig. 4).

The Kuroshio flowed along the Japanese coast from Kyushu to Kii Peninsula, then flowed eastward. After passing near Hachijo Island, it flowed NE-ward off Boso Peninsula (Fig. 9).

Coastal and off-coastal branches of the Oyashio cold water extended southward to 37.0°N, 141.9°E and 39.0°N, 146.0°E, respectively (Fig. 5).

### Pacific Ocean

In the equatorial Pacific, SSTs were more than 1°C above normal east of 175°W, and 2°C above normal east of 145°W. Positive SST anomalies of greater than +4°C were found off the South American coast. SST anomaly of the El **Niño** monitoring region (4°N-4°S, 150°W-90°W) was +2.6°C (Table 1); the largest value observed since January 1983 (+3.2°C).

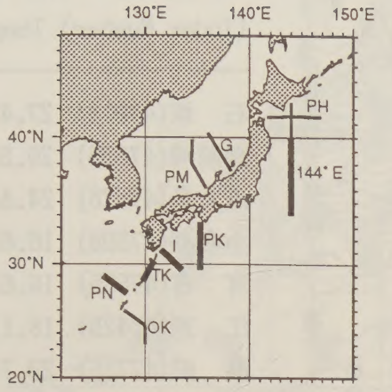
In the North Pacific, the area of negative SST anomalies of less than -1°C between 30°N and 40°N from 150°E to 140°W in June was reduced though negative SST anomalies of less than -1°C were still found at 40°N from 155°E to 175°E. Positive SST anomalies of more than +0.5°C continued north of 50°N. SSTs were more than +1°C above normal along the North American coast. Positive SST anomalies of more than +2°C were found off Baja California and the Gulf of Alaska (Fig. 16).

# 海洋気象観測船による日本近海における海洋観測

## Oceanographic observations in the seas adjacent to Japan by four research vessels of the Marine Observatories

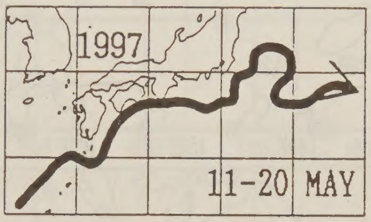
函館・神戸・長崎・舞鶴の各海洋気象台では、それぞれ高風丸・春風丸・長風丸・清風丸によって、日本近海に定期観測定線(図A)を定め、年に4回以上の海洋観測を行っている。これらの定線観測は気候変動および海洋環境の監視、海況変動の実態の把握等を目的としている。また、これらの定線のいくつかは、黒潮の流路や流量の変動の把握のために、黒潮を横断して設定されている。

Hakodate, Kobe, Nagasaki and Maizuru Marine Observatories of the Japan Meteorological Agency perform routine oceanographic observations along fixed lines in the seas adjacent to Japan four times or more in a year by the research vessels *Kofu Maru, Shumpu Maru, Chofu Maru* and *Seifu Maru*, respectively. Some of these lines are set across the Kuroshio in order to watch variation in the path of the Kuroshio and its volume transport.



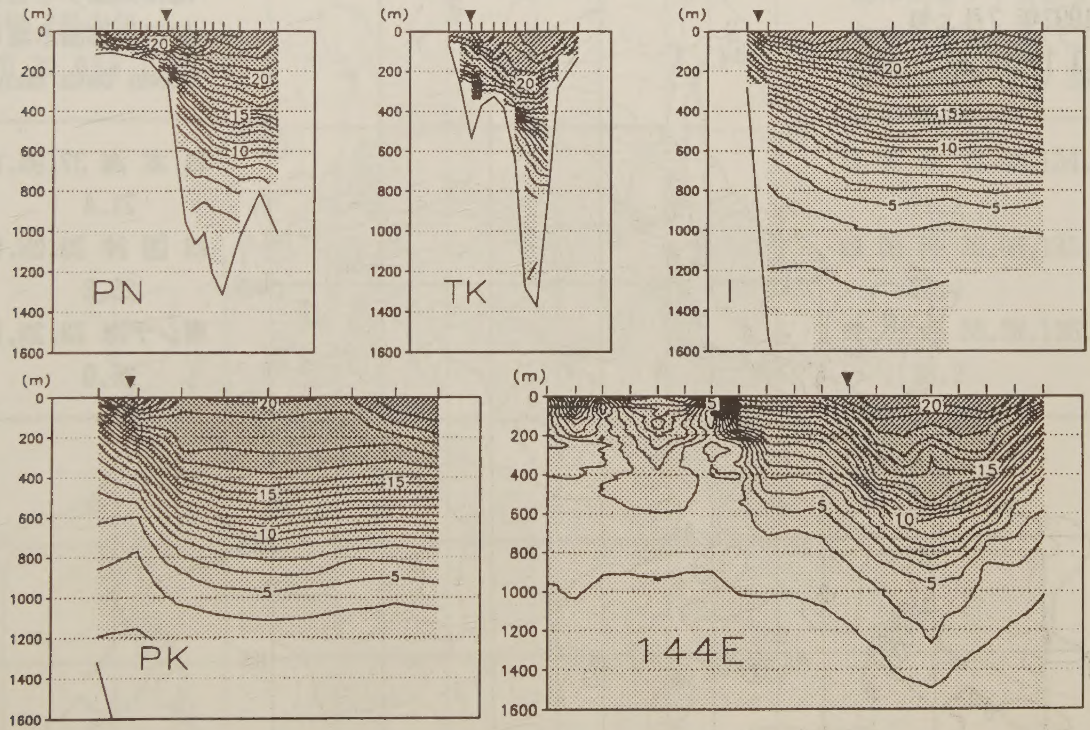

図A. 海洋気象台の観測船による定期海洋観測定線

**Fig. A**. Routine oceanographic observation lines in the seas adjacent to Japan.



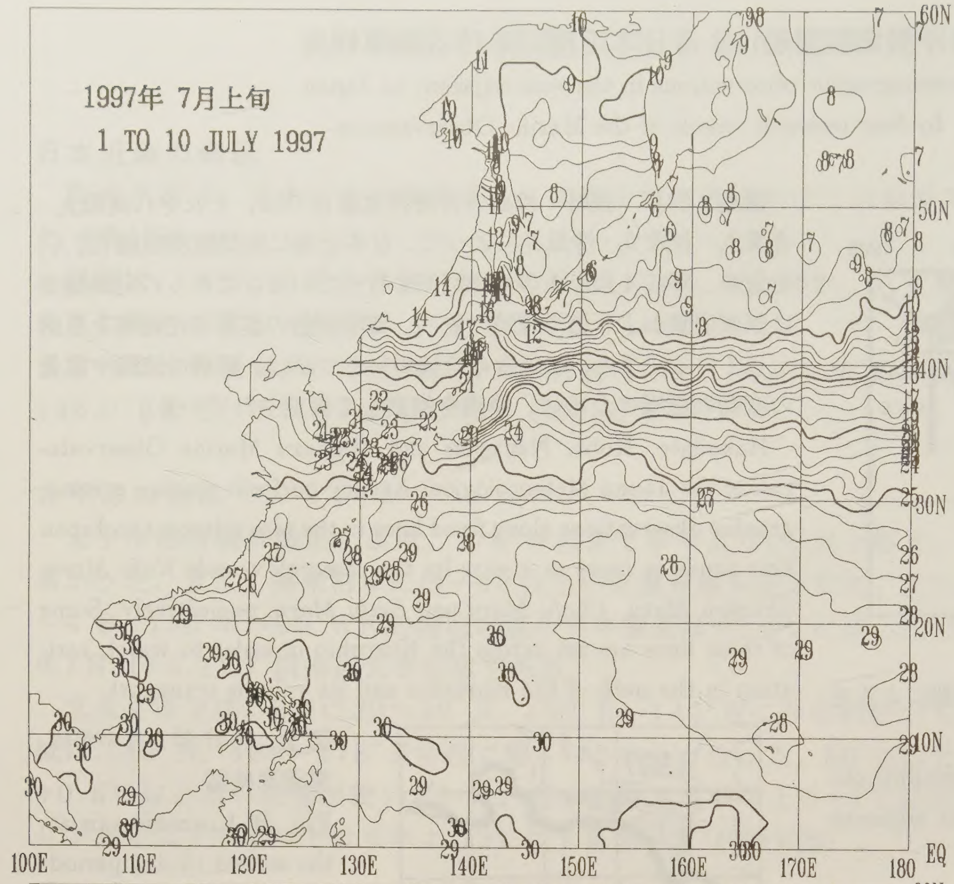

図B. 1997年5月中旬の黒潮流軸図

**Fig. B**. Kuroshio axis at the second 10-day period in May 1997.



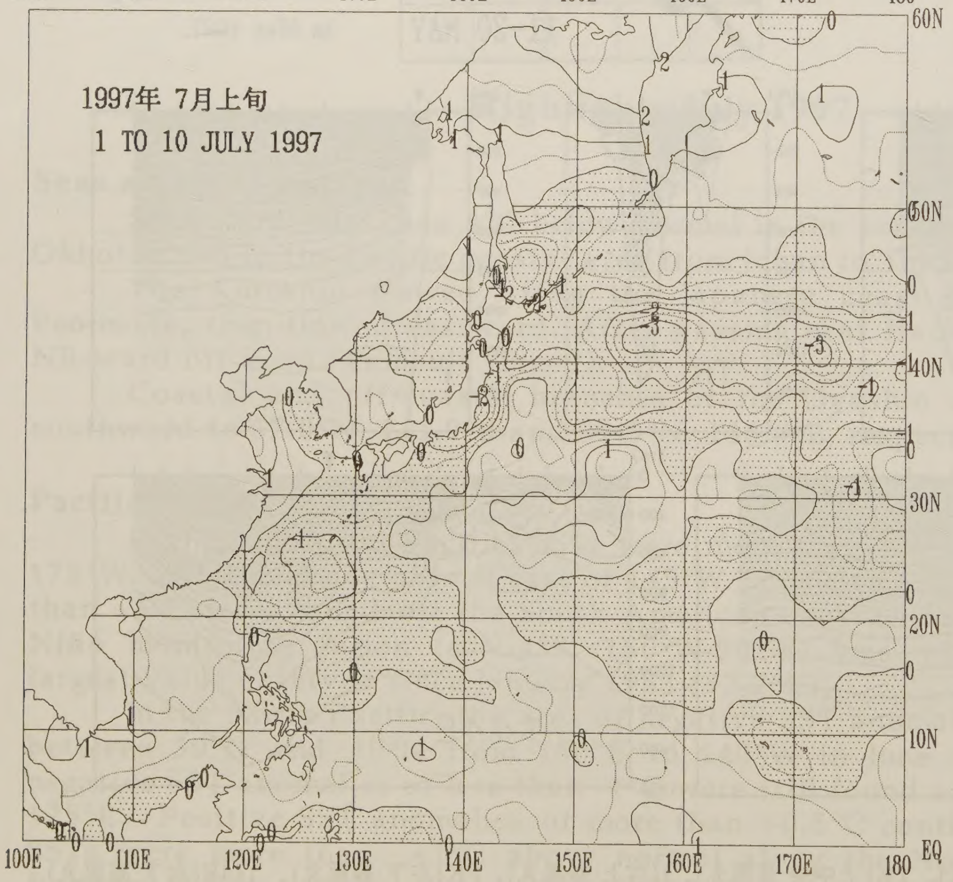

図C. PN(左上:長風丸)、TK(上中央:長風丸)、I(右上:春風丸)、PK(左下:春風丸)、144E(右下:高風丸)の各定線の1997年4〜5月における水温の鉛直断面図(°C, 等値線間隔は1°C, 図の右側が観測定線の南/東側にあたる). ▼は観測時の黒潮流軸を示す.

**Fig. C**. Vertical sections of water temperature (°C) in April/May 1997. Observations are performed by *Chofu Maru* (PN, TK), *Shumpu Maru* (I, PK), and *Kofu Maru* (144E). Right side of the figure corresponds to south/east side of each section. Closed Triangles represent the axis of the Kuroshio.




**旬平均沿岸水温(℃)**
**Coastal Water Temperature**

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 27.4 | -1.5 |
| 御前崎(47655) | 20.5 | -2.6 |
| 八丈島(47678) | 24.8 | 0.8 |
| 小名浜(47598) | 16.6 | -0.7 |
| 宮　古(47585) | 15.6 | 1.4 |
| 江　差(47428) | 18.1 | - |
| 浜　田(47755) | 23.7 | - |

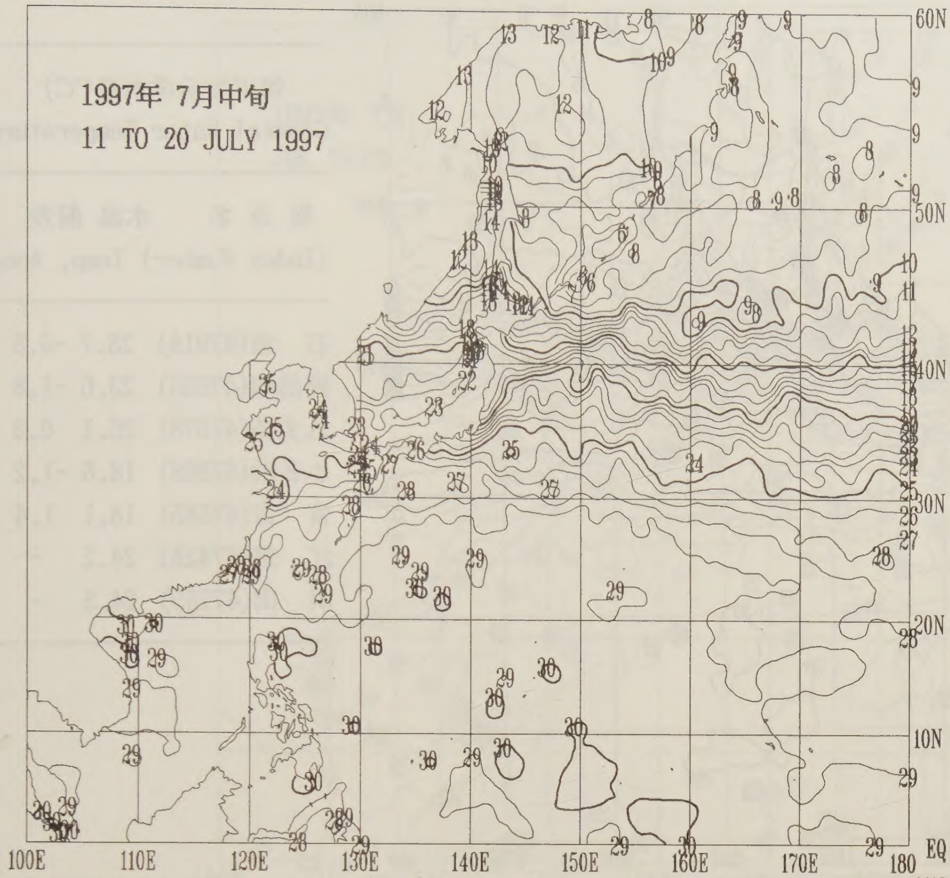



**海洋気象ブイロボット**
**旬平均海面水温(℃)**
**Ocean Data Buoy SST**

| | | |
|---|---|---|
| 日本海 | 37.9N,134.5E | 21.4 |
| 四国沖 | 29.0N,135.0E | 26.8 |
| 東シナ海 | 28.2N,126.3E | 26.9 |

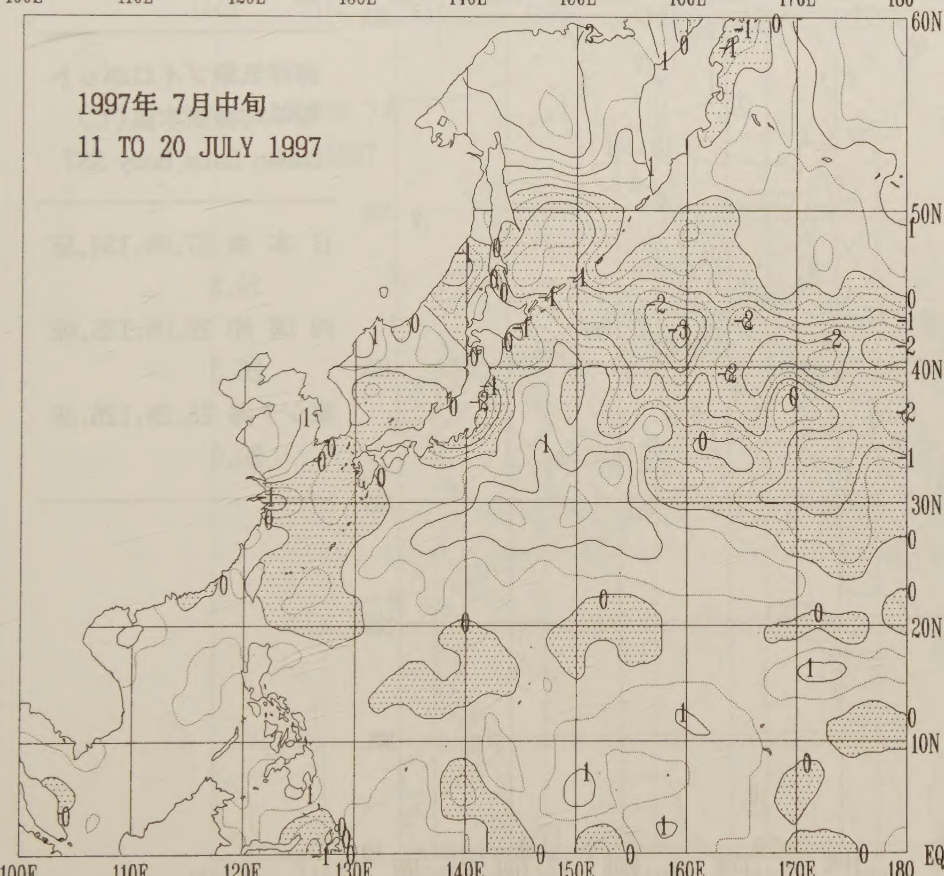
第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 7月上旬)

Fig.1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in JUL 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.




旬平均沿岸水温(℃)
Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石 垣(47918) | 28.5 | -0.7 |
| 御前崎(47655) | 20.7 | -3.4 |
| 八丈島(47678) | 24.7 | -0.1 |
| 小名浜(47598) | 18.0 | 0.0 |
| 宮 古(47585) | 17.2 | 2.1 |
| 江 差(47428) | 20.1 | - |
| 浜 田(47755) | 23.8 | - |

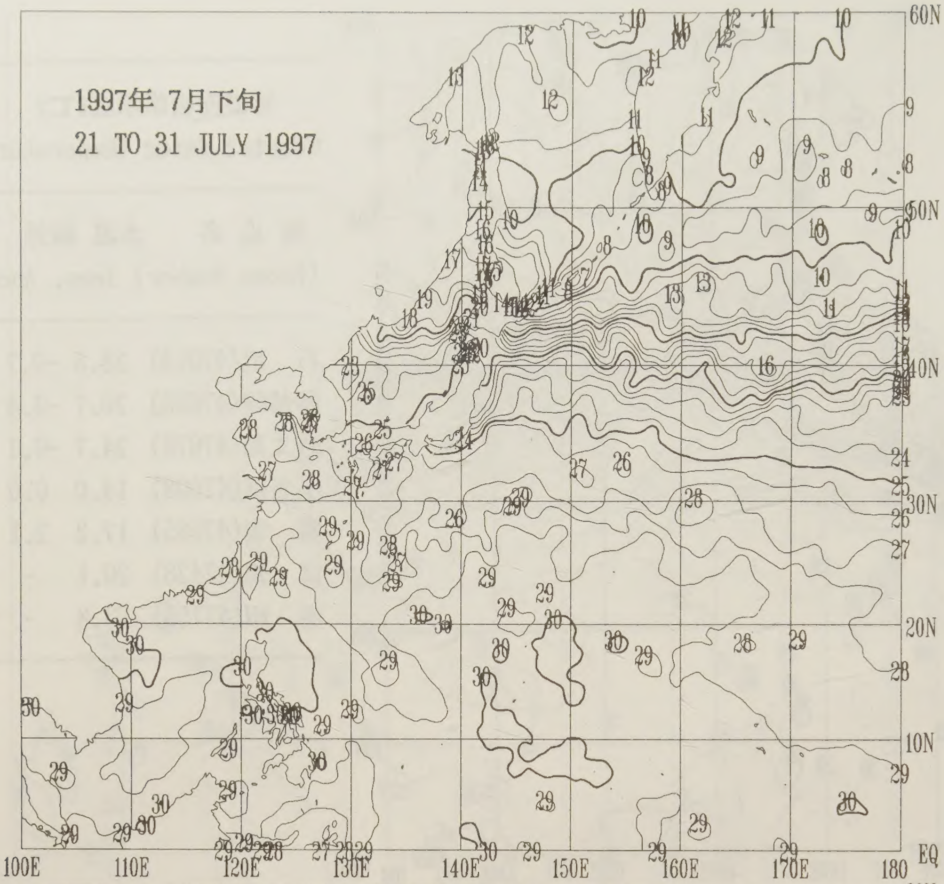



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| 地点 | 位置 | 水温 |
|---|---|---|
| 日本海 | 37.9N,134.5E | 22.2 |
| 四国沖 | 29.0N,135.0E | 28.4 |
| 東シナ海 | 28.2N,126.3E | 28.2 |

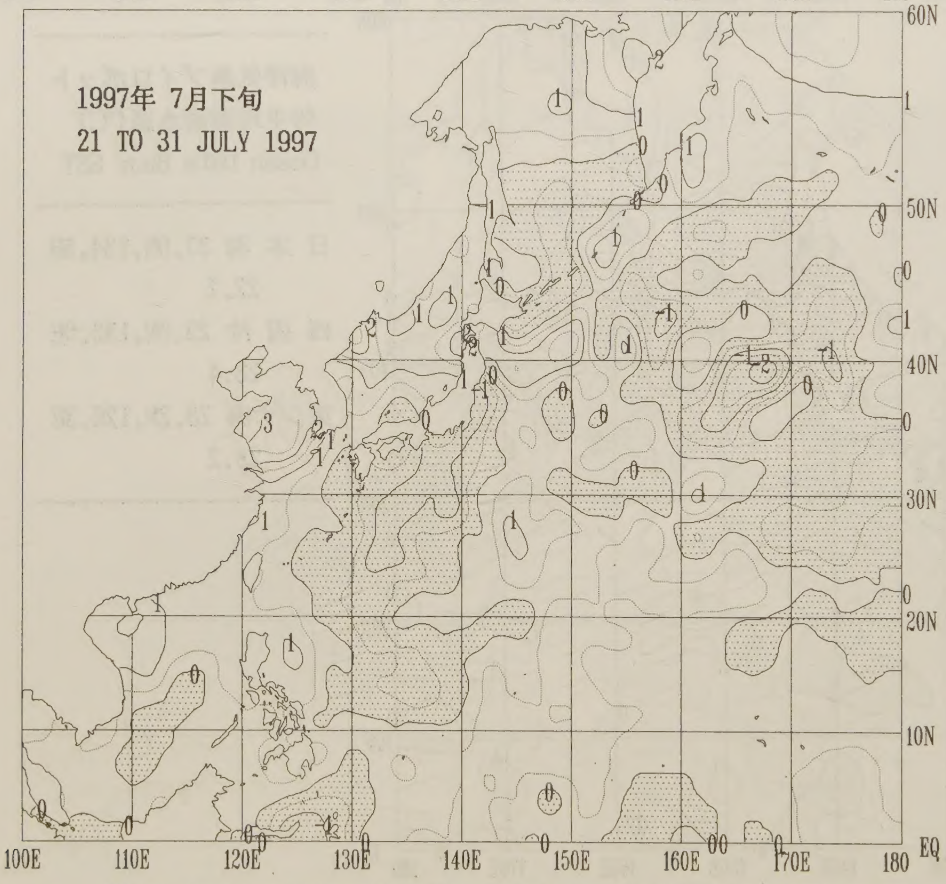
第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 7月中旬)

Fig.2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in JUL 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.




旬平均沿岸水温(℃)
Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 28.7 | -0.5 |
| 御前崎(47655) | 23.6 | -1.8 |
| 八丈島(47678) | 26.1 | 0.3 |
| 小名浜(47598) | 18.6 | -1.2 |
| 宮　古(47585) | 18.1 | 1.4 |
| 江　差(47428) | 24.2 | - |
| 浜　田(47755) | 24.5 | - |

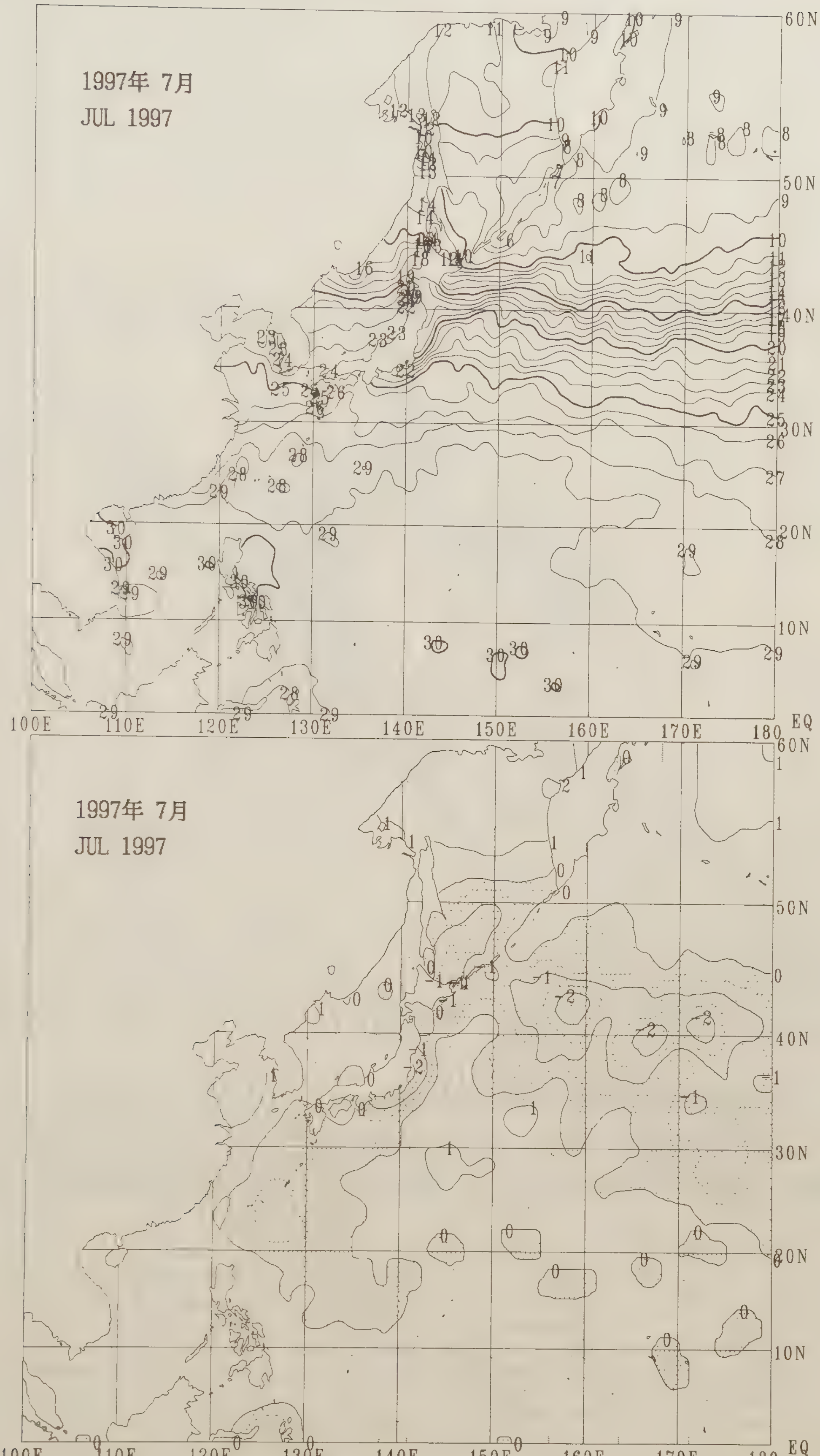



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| 地点 | 位置 | 水温 |
|---|---|---|
| 日本海 | 37.9N,134.5E | 24.5 |
| 四国沖 | 29.0N,135.0E | 26.3 |
| 東シナ海 | 28.2N,126.3E | 29.0 |

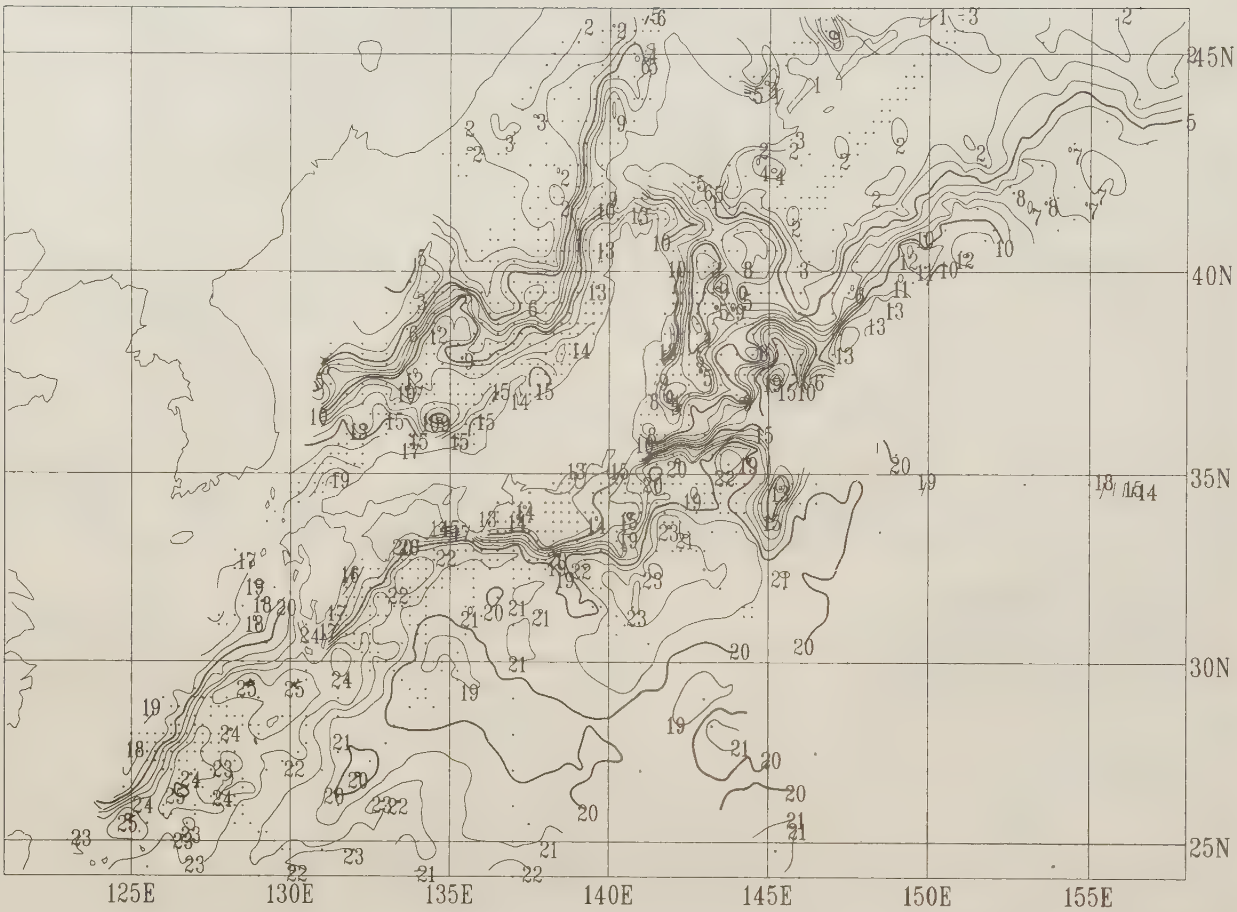
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 7月下旬)

Fig.3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in JUL 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



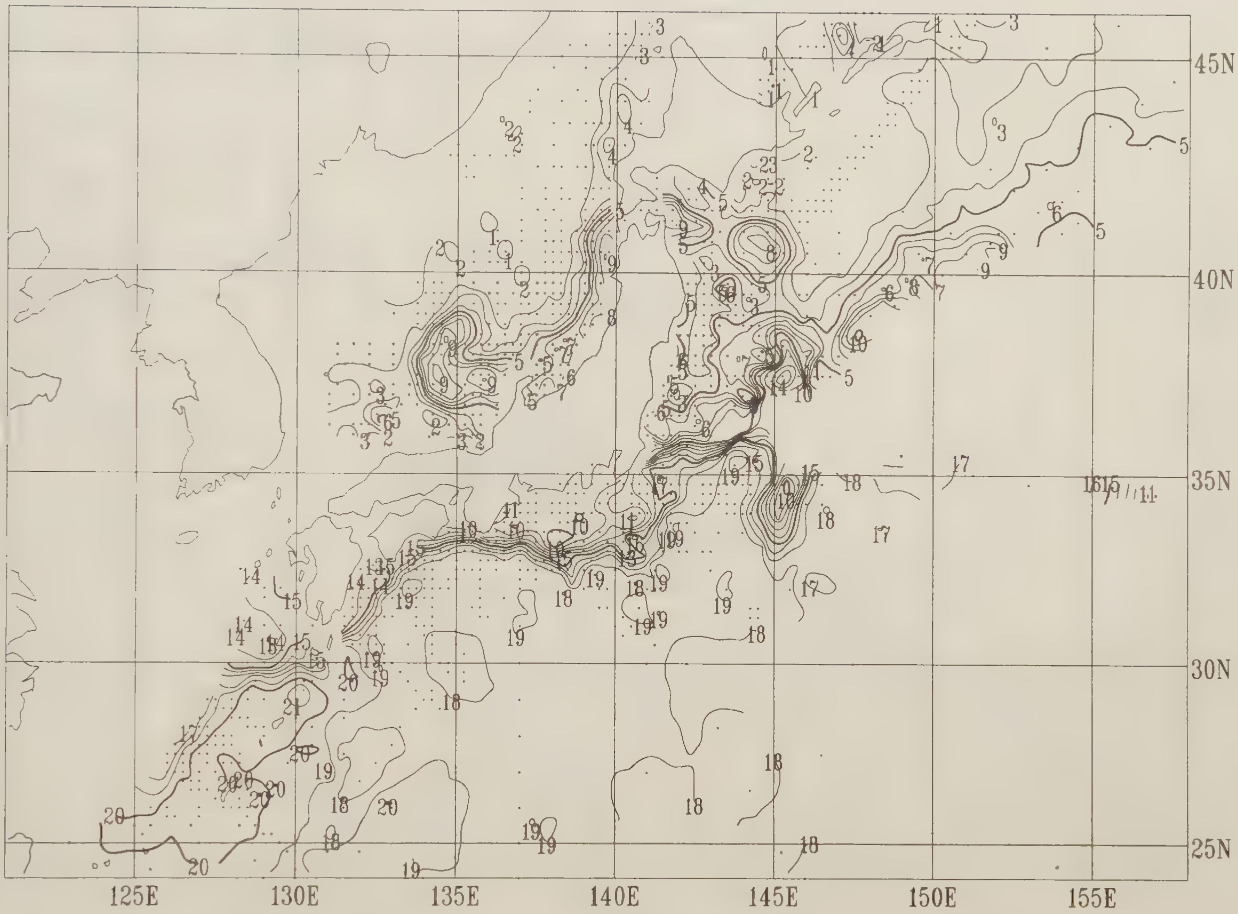

第4図 北西太平洋月平均海面水温図(上)及び偏差図(下)(1997年 7月)

Fig.4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for JUL 1997. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



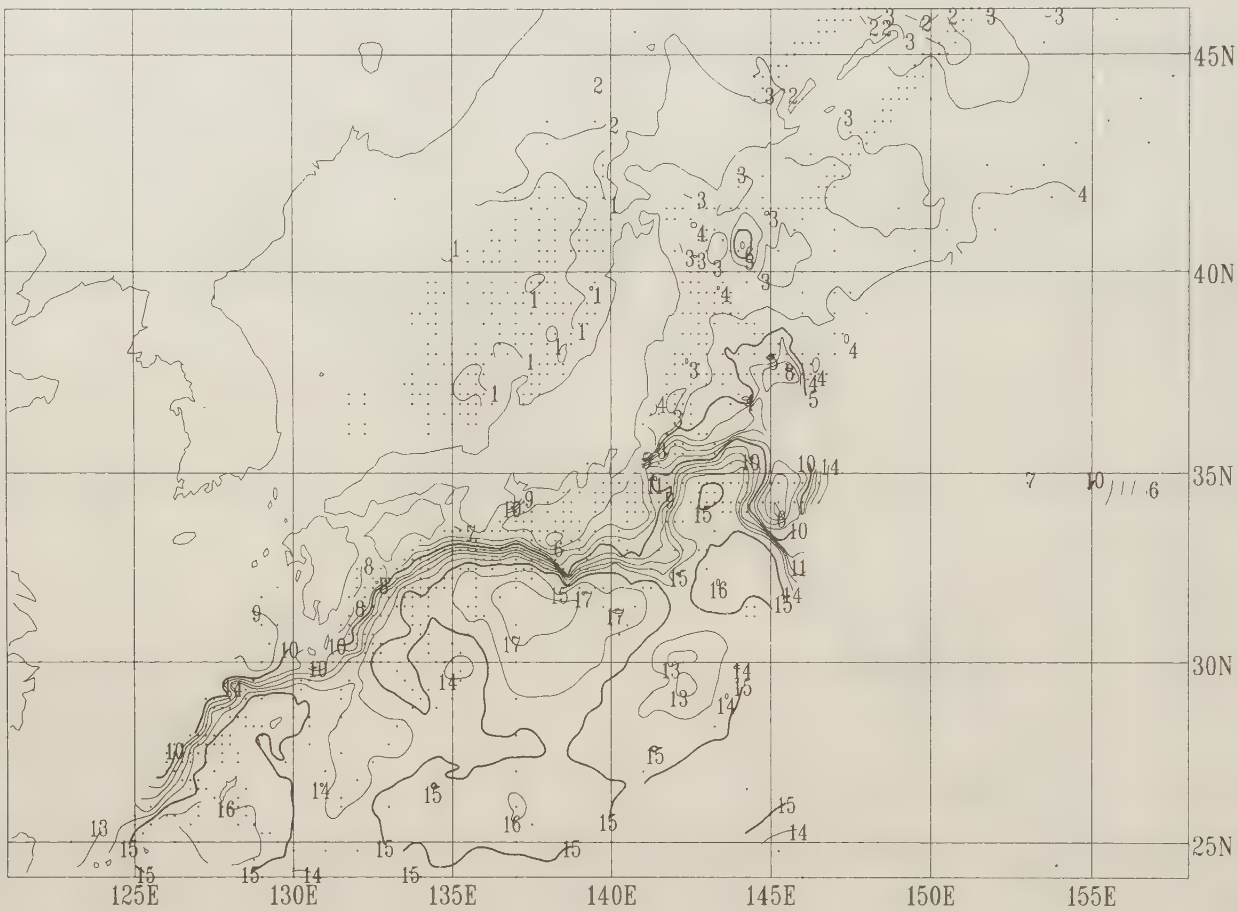

第5図　日本近海表層水温図(深さ100m) (1997年 7月)

Fig.5 Subsurface (100m) temperatures in the seas adjacent to Japan for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.



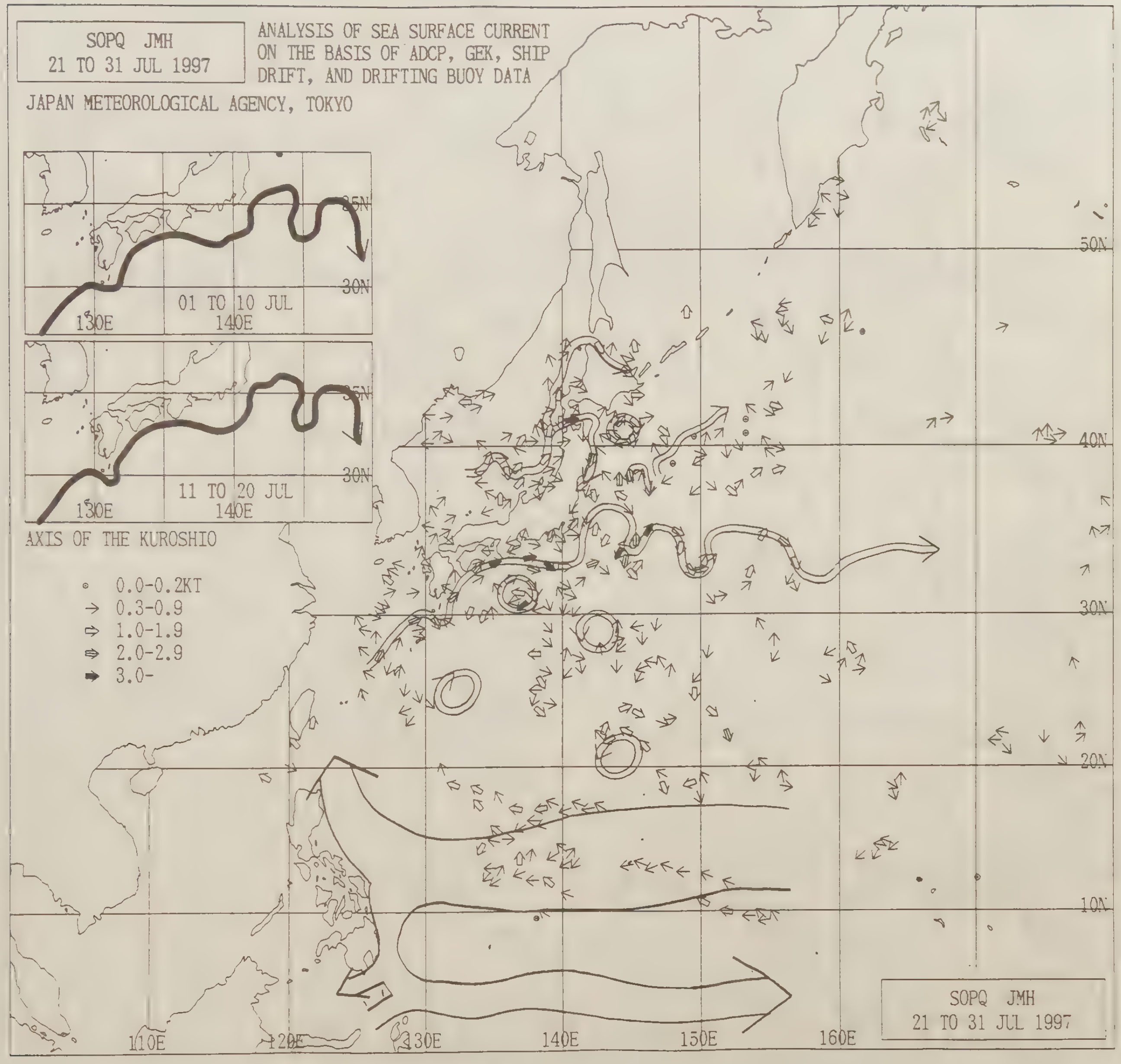

第6図　日本近海表層水温図(深さ200m)（1997年 7月）

Fig.6 Subsurface (200m) temperatures in the seas adjacent to Japan for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.



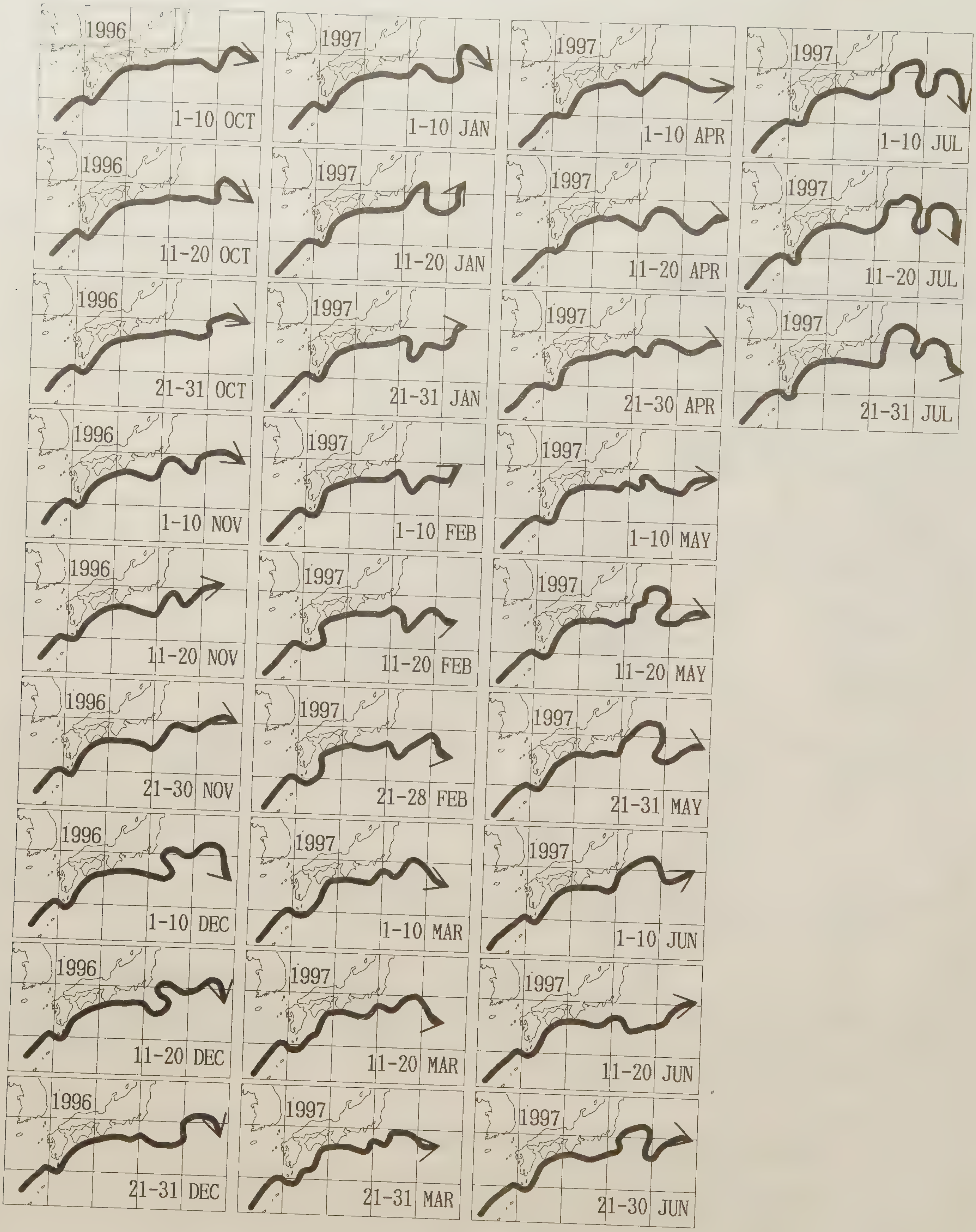

第7図　日本近海表層水温図(深さ400m)（1997年 7月)

Fig.7 Subsurface (400m) temperatures in the seas adjacent to Japan for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.




第8図　北西太平洋海流図（1997年 7月下旬）

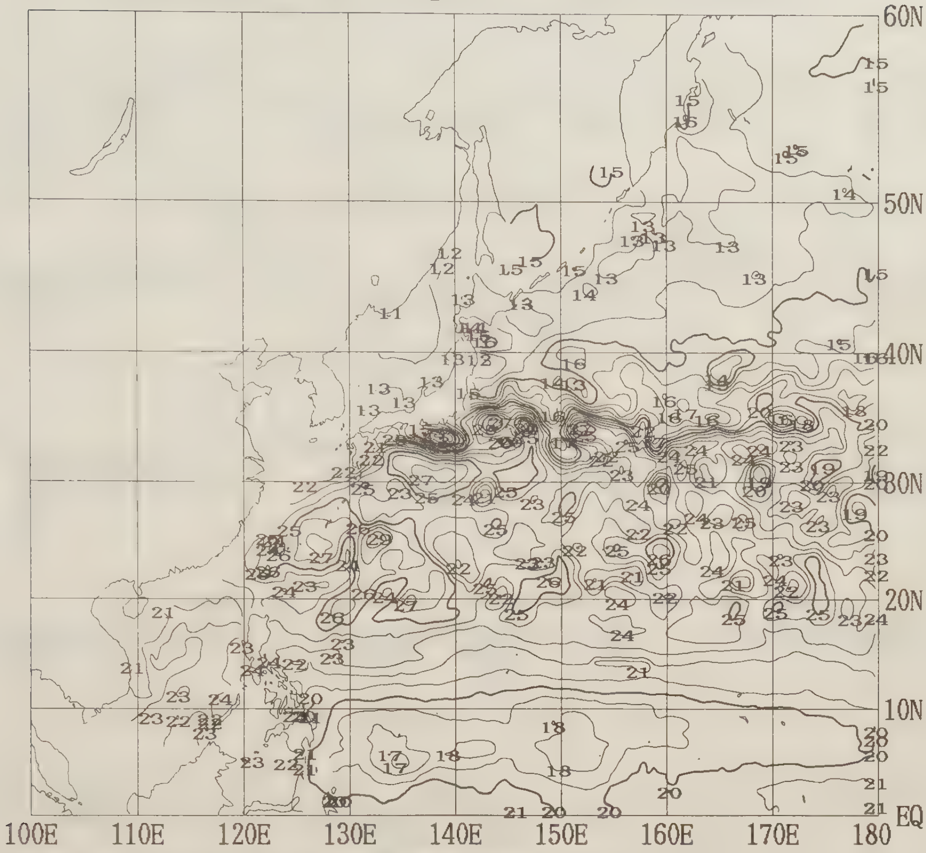
Fig.8 Analysis of the sea surface current in the western North Pacific for the 3rd ten-day period in JUL 1997. Small arrows indicate in situ observations. Major currents such as the Kuroshio and the North Equatorial Current are denoted by larger open arrows.




第9図 旬別黒潮流軸図

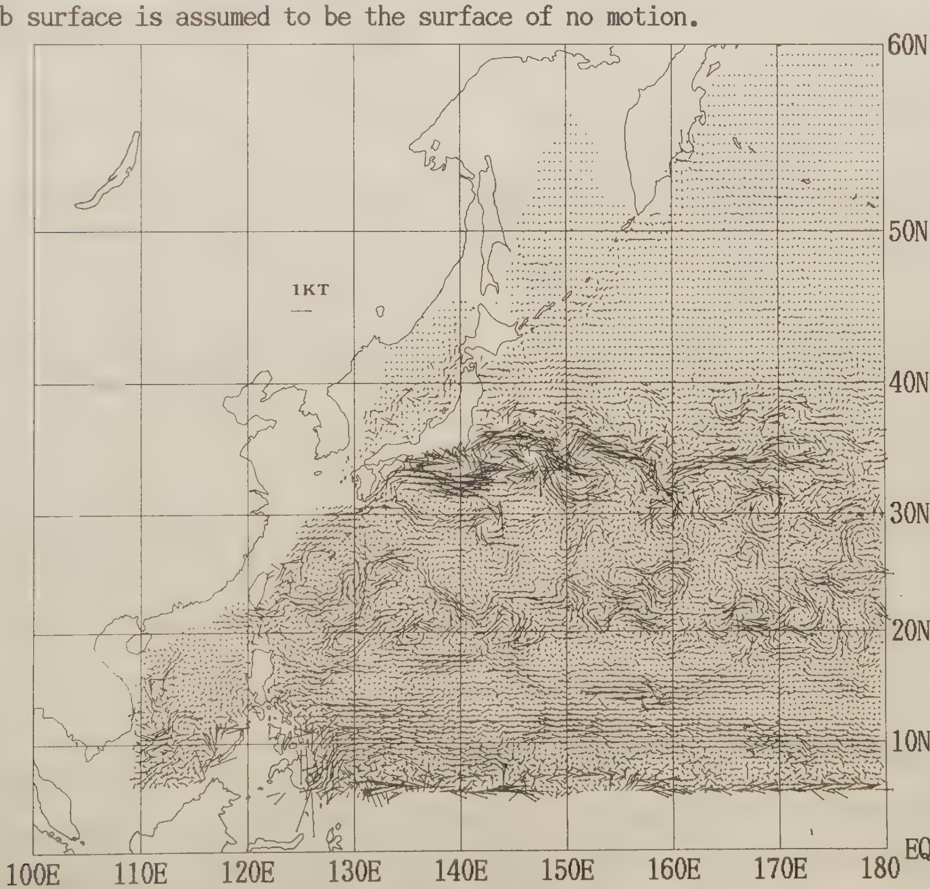
Fig.9 Location of the Kuroshio axis

Sea surface dynamic heights and current distribution




第10図 北西太平洋力学的海面高度分布図(1997年 7月20日)

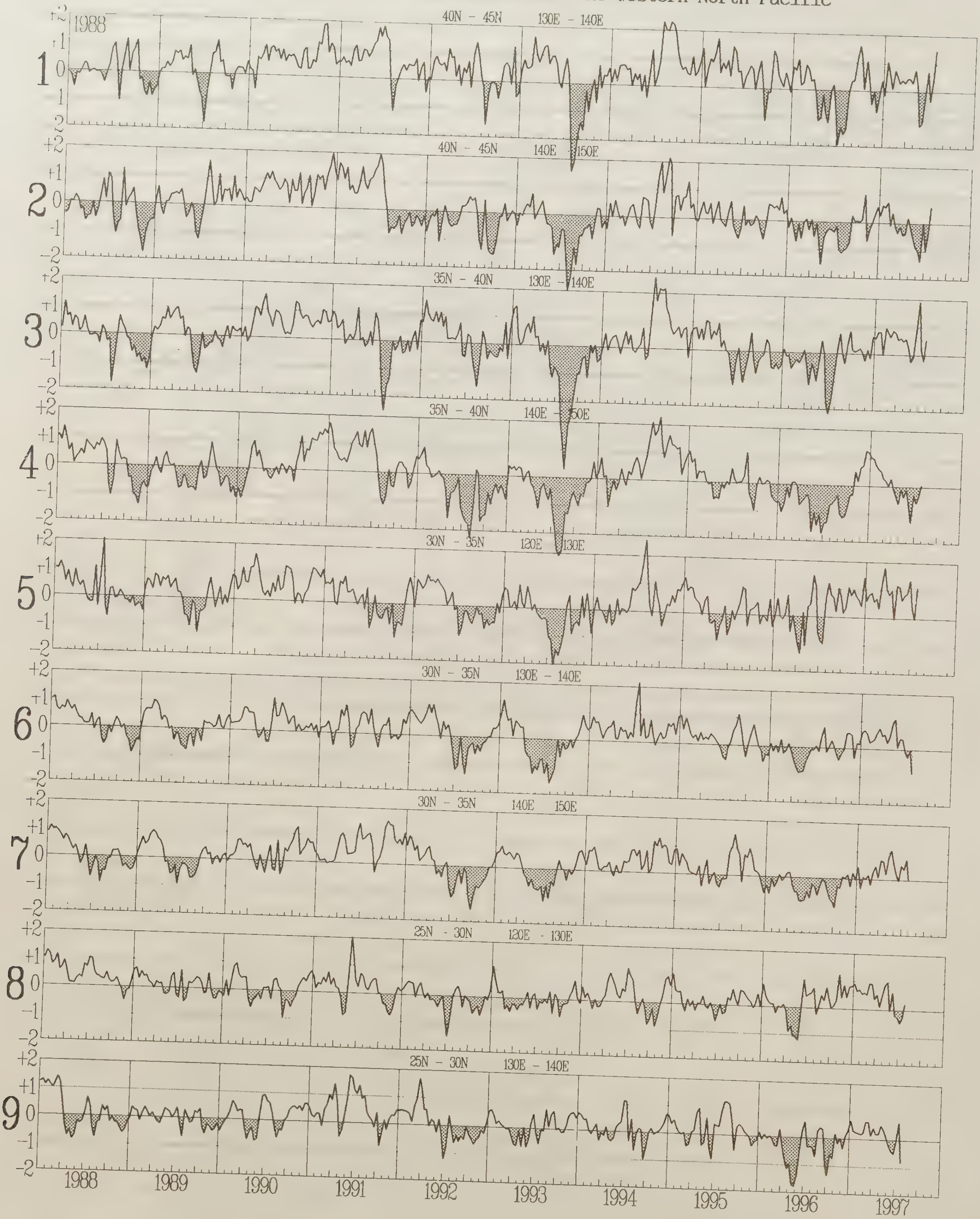
Fig.10 Sea surface dynamic heights (10cm) in the western North Pacific derived from the altimeter data of TOPEX/POSEIDON (JUL 20, 1997).
1500db surface is assumed to be the surface of no motion.




第11図 北西太平洋海流ベクトル図(1997年 7月20日)

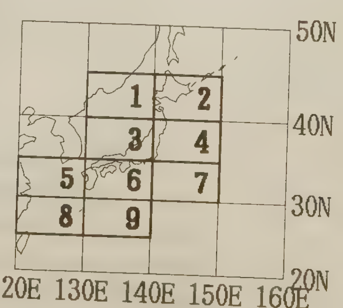
Fig.11 Sea surface current vectors in the western North Pacific (JUL 20, 1997).
Vectors are derived from the sea surface dynamic heights from TOPEX/POSEIDON and subsurface temperature distribution assuming the geostrophic relation.

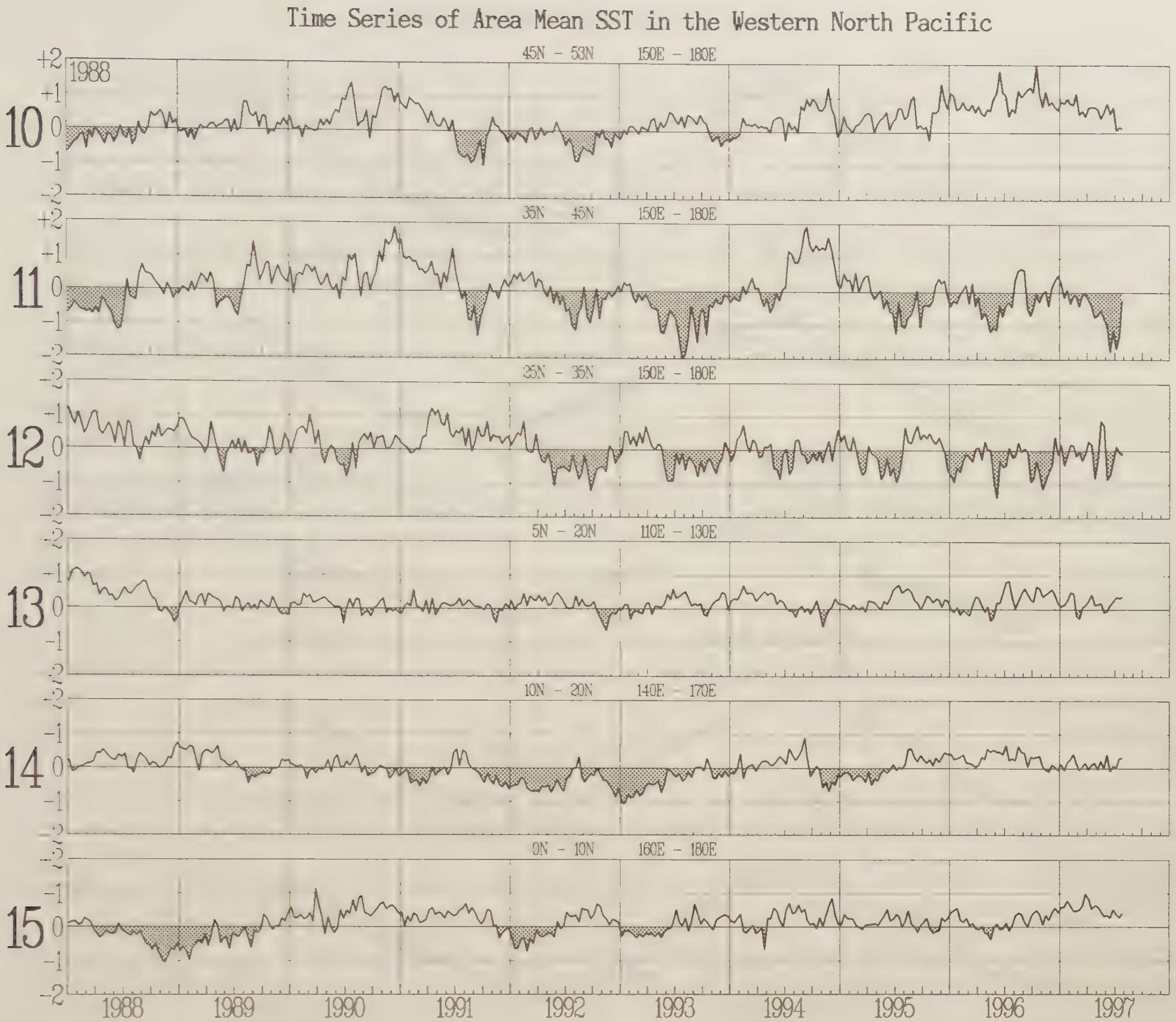
## Time Series of Area Mean SST in the Western North Pacific




第12図　海域別旬平均海面水温平年偏差時系列図

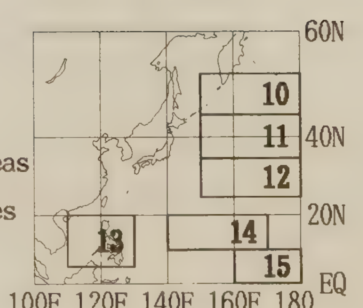
Fig.12 Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

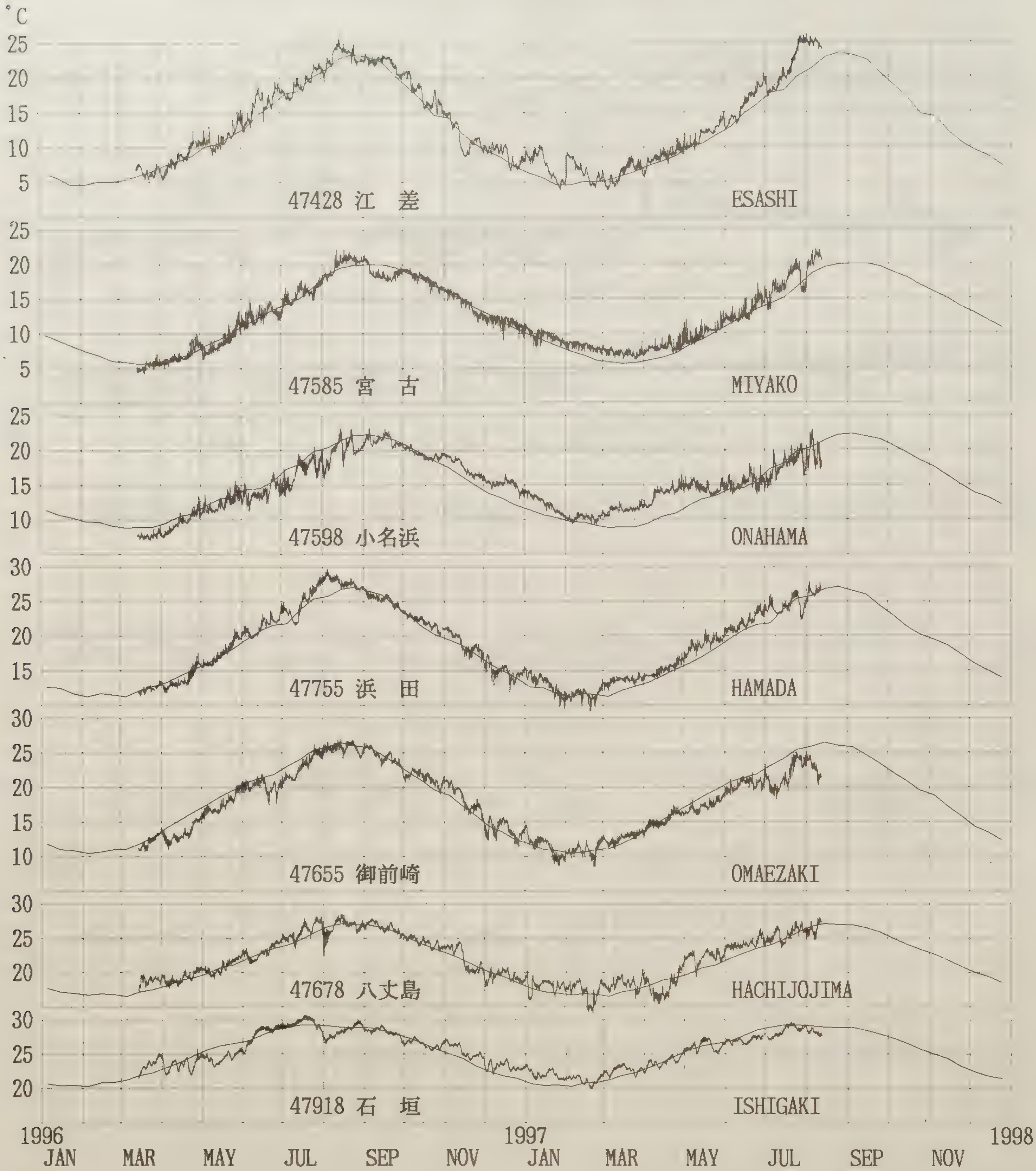


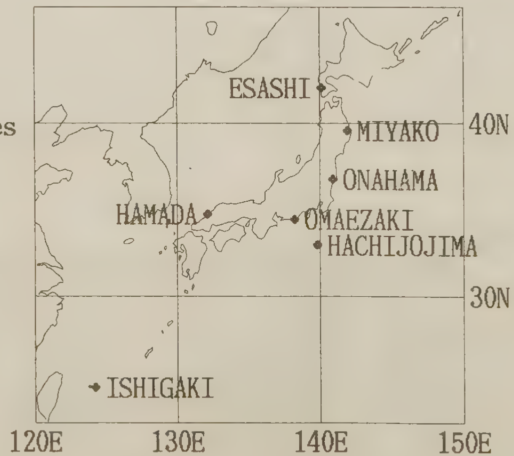



第12図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig.12 (continue) Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

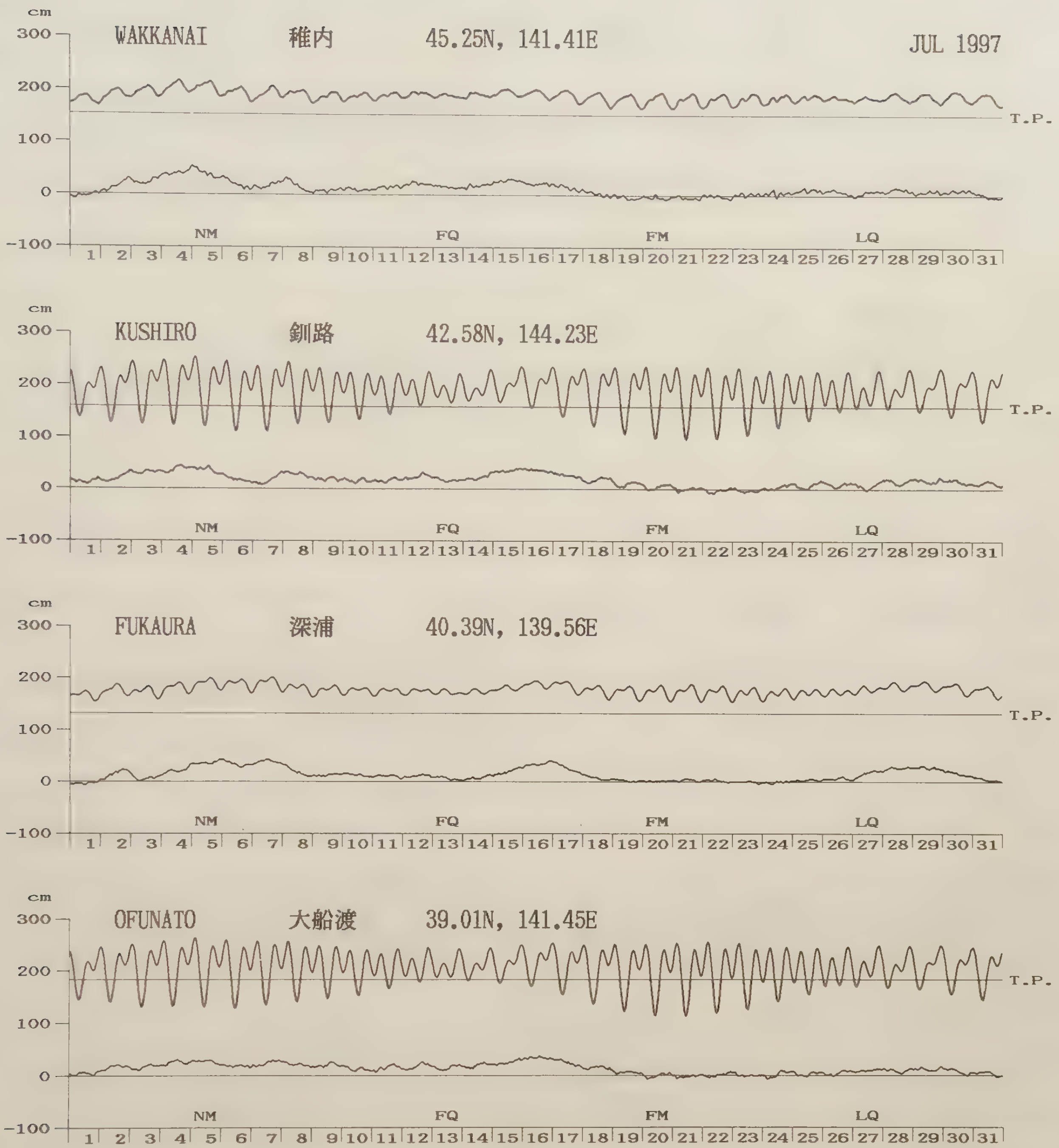




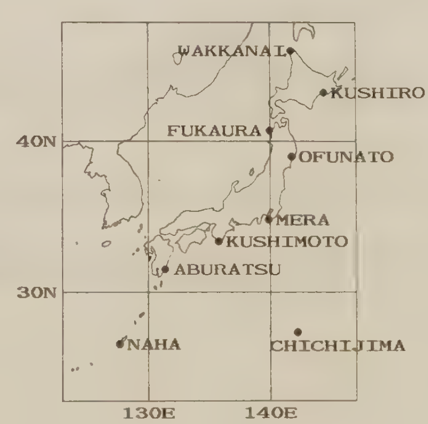

第13図 沿岸水温時系列図

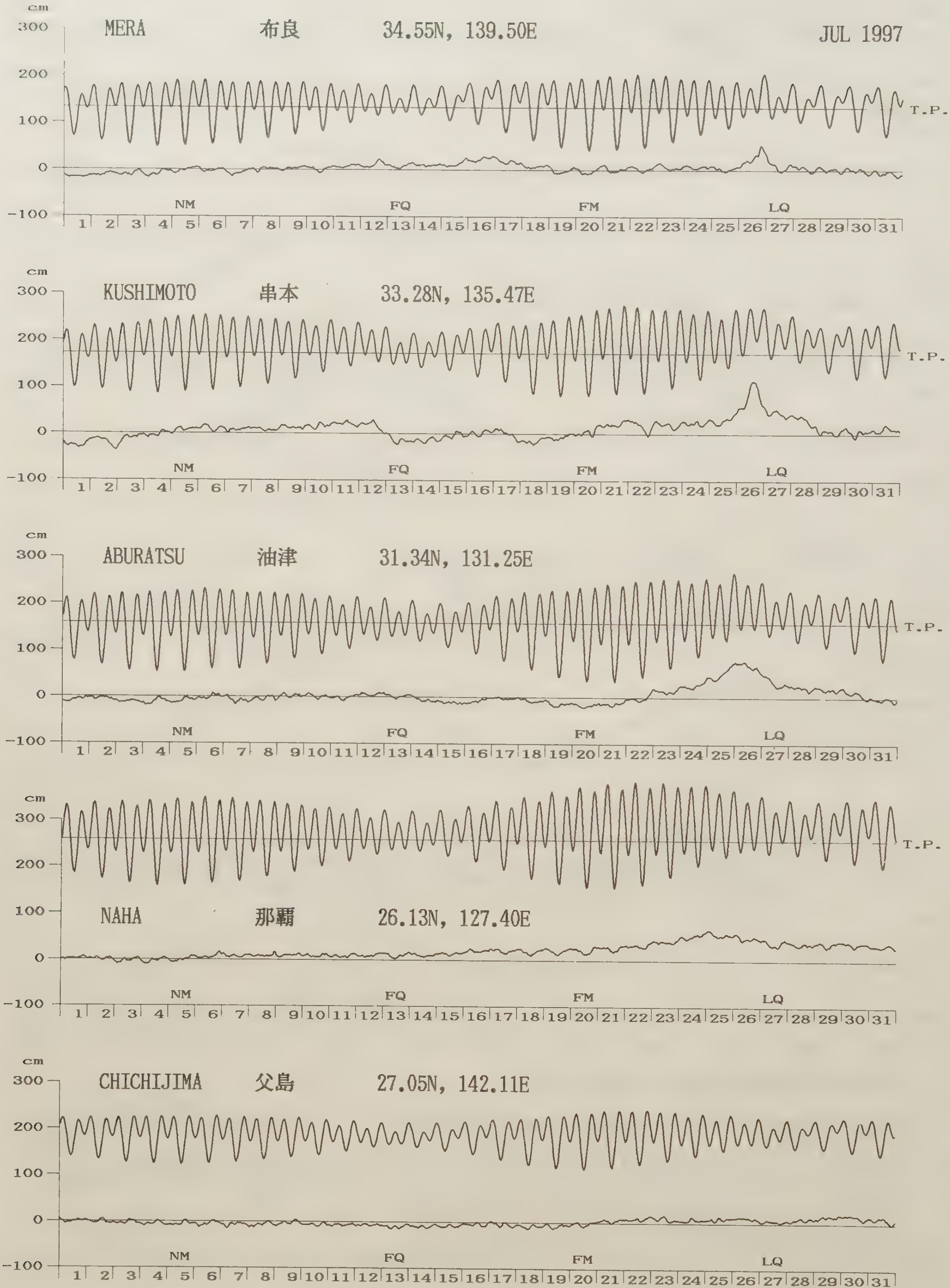
Fig.13 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.



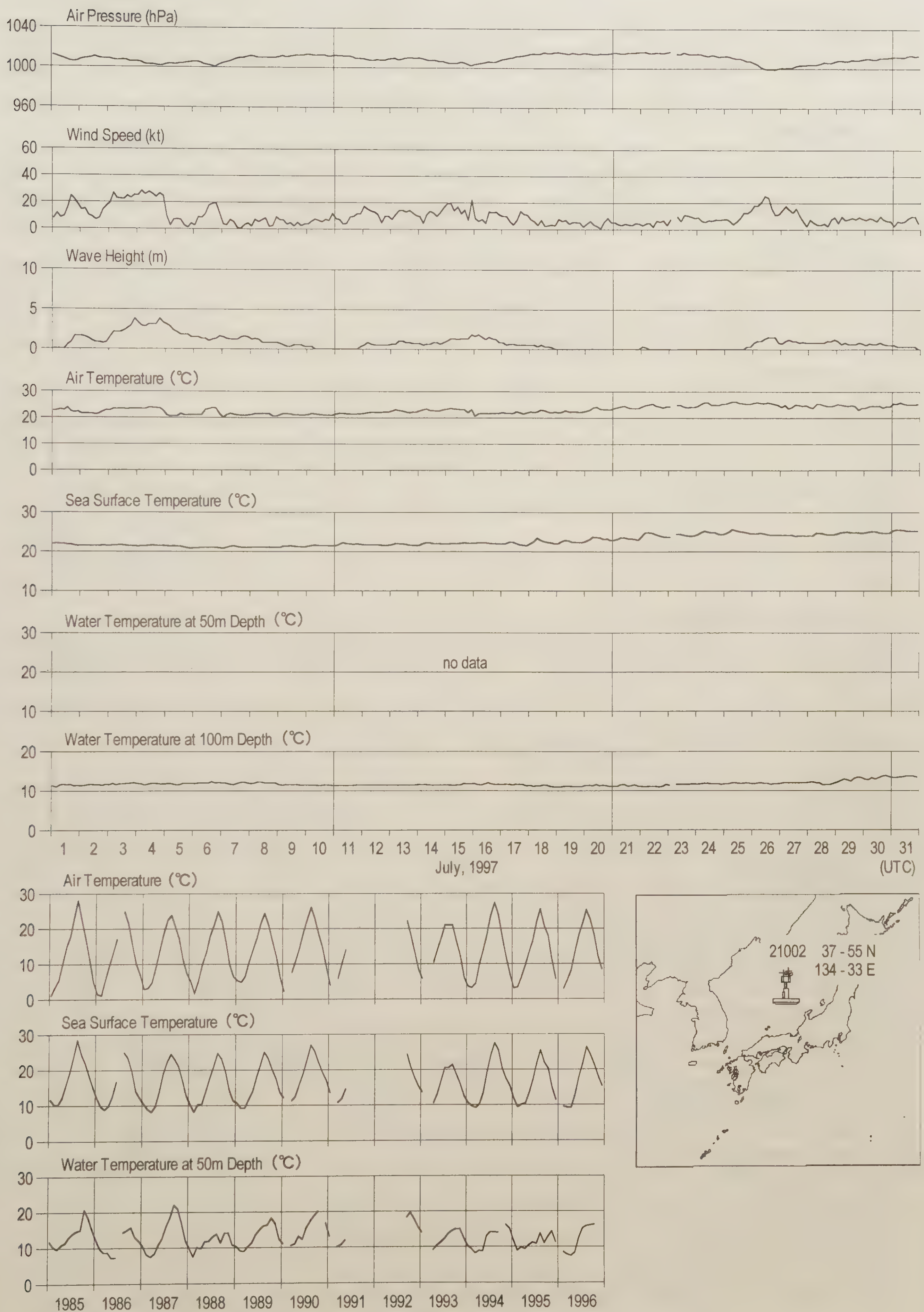

第14図 沿岸潮位時系列図（1997年 7月）

Fig.14 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.
Sea level anomalies are two times values of the differences between the observations and the predicted astronominal tide.
FM: full moon, FQ: first quarter
NM: new moon, LQ: last quarter
T.P.: Mean sea level of Tokyo Bay (Tokyo Peil)



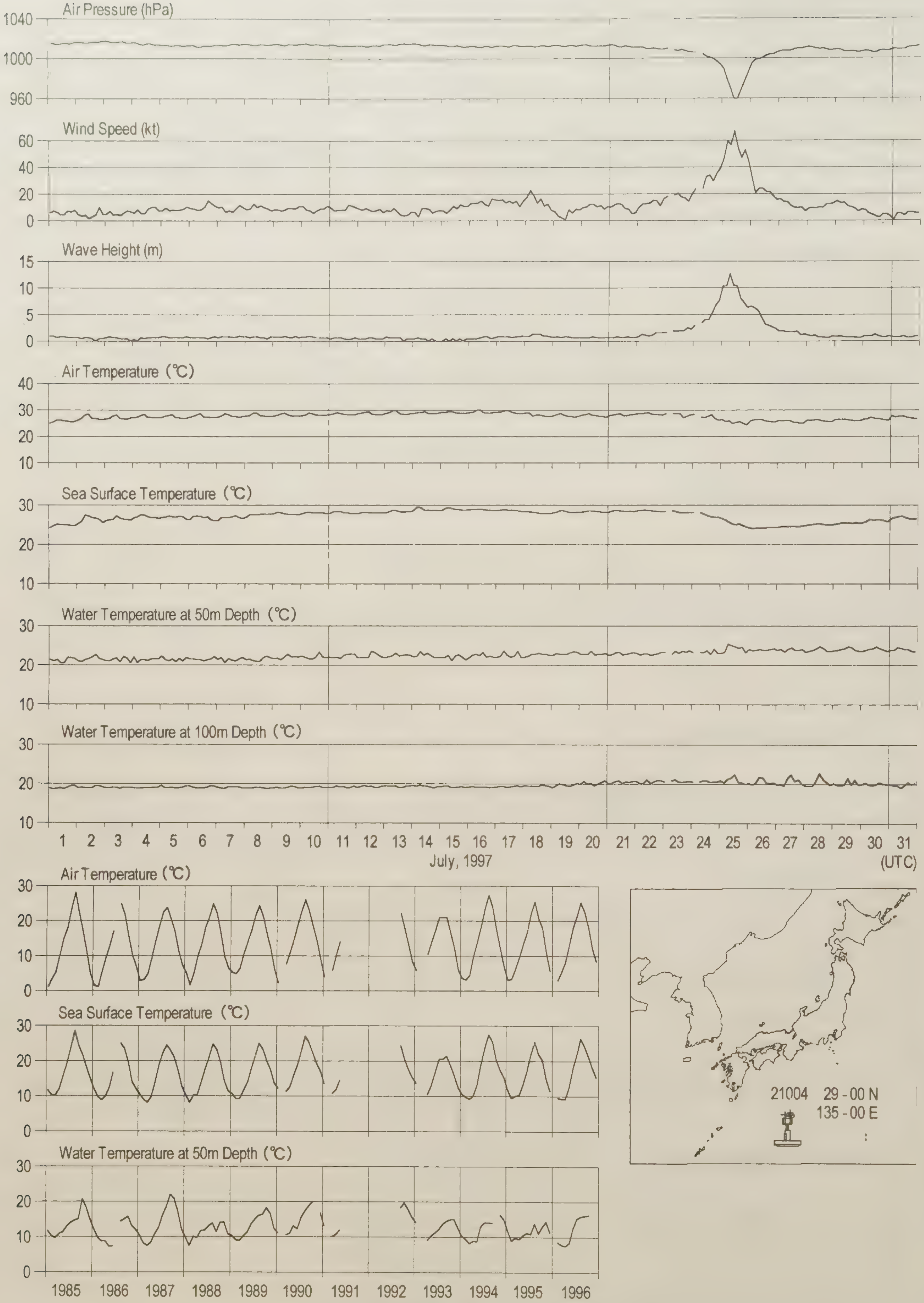



第14図 つづき
Fig.14 continue



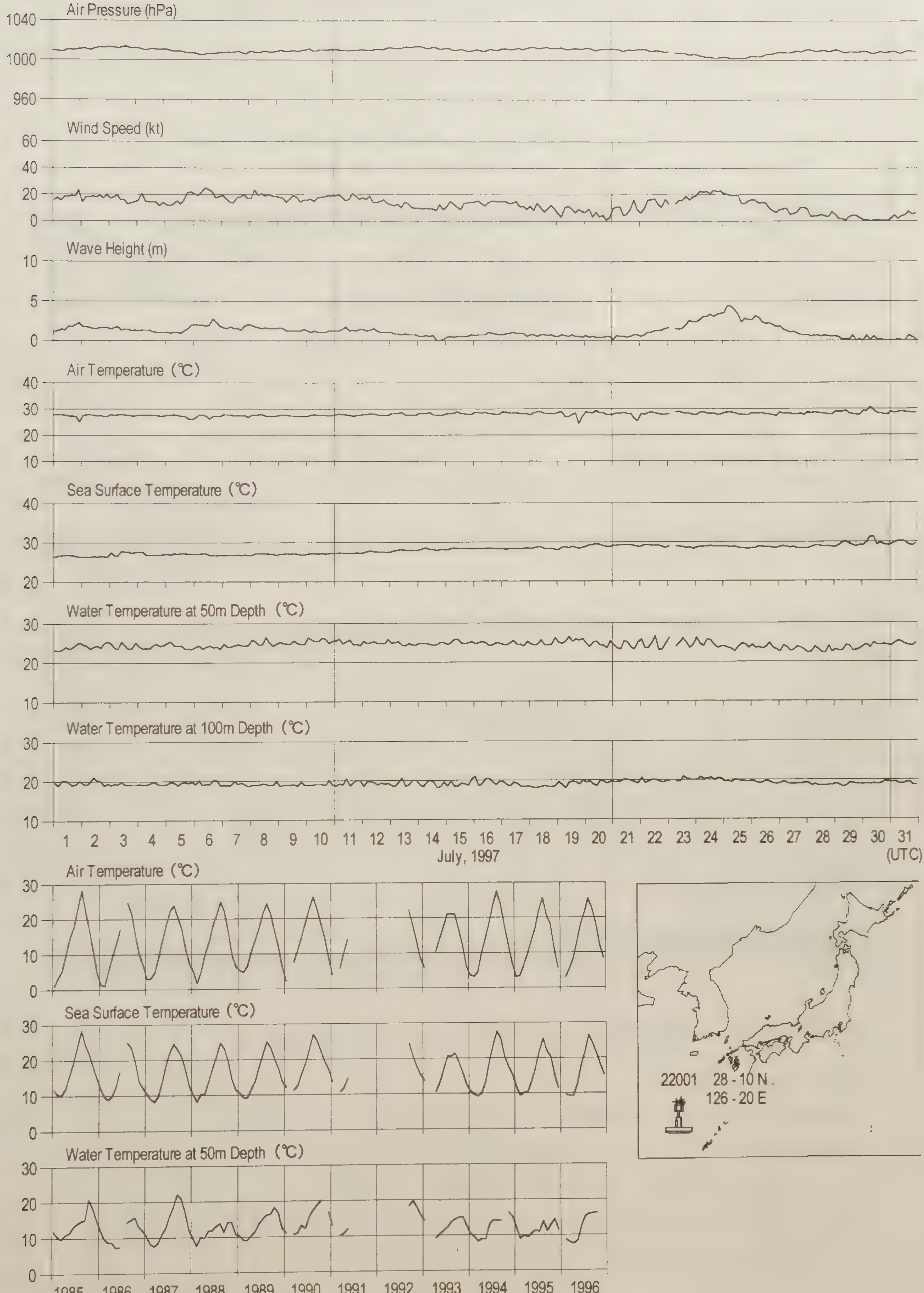

第15図　海洋気象ブイロボットによる観測要素の時系列図（日本海：21002）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the Japan Sea (WMO ID No. 21002). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



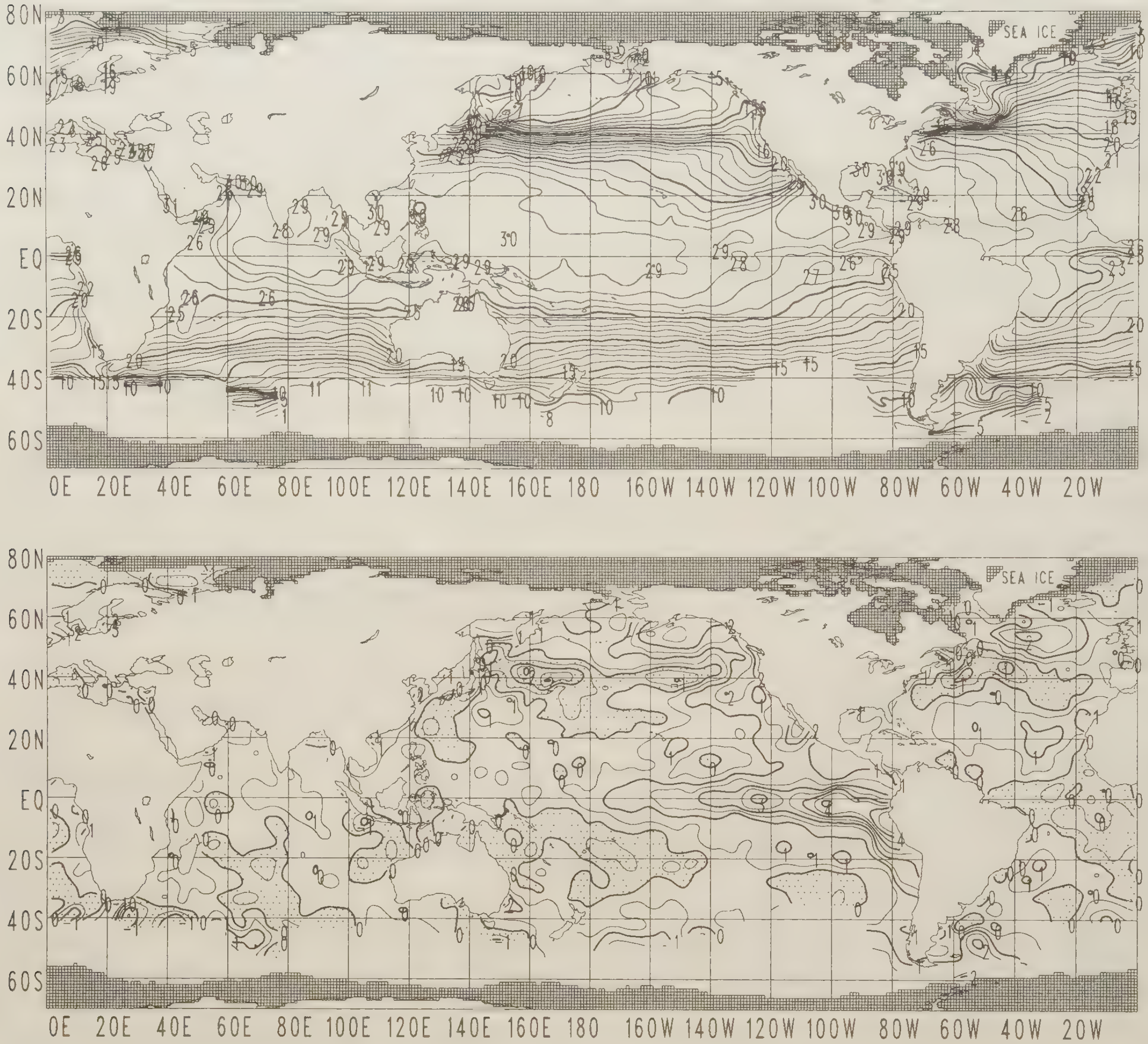

第15図　海洋気象ブイロボットによる観測要素の時系列図（四国沖：21004）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation south of Shikoku (WMO ID No. 21004).
The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



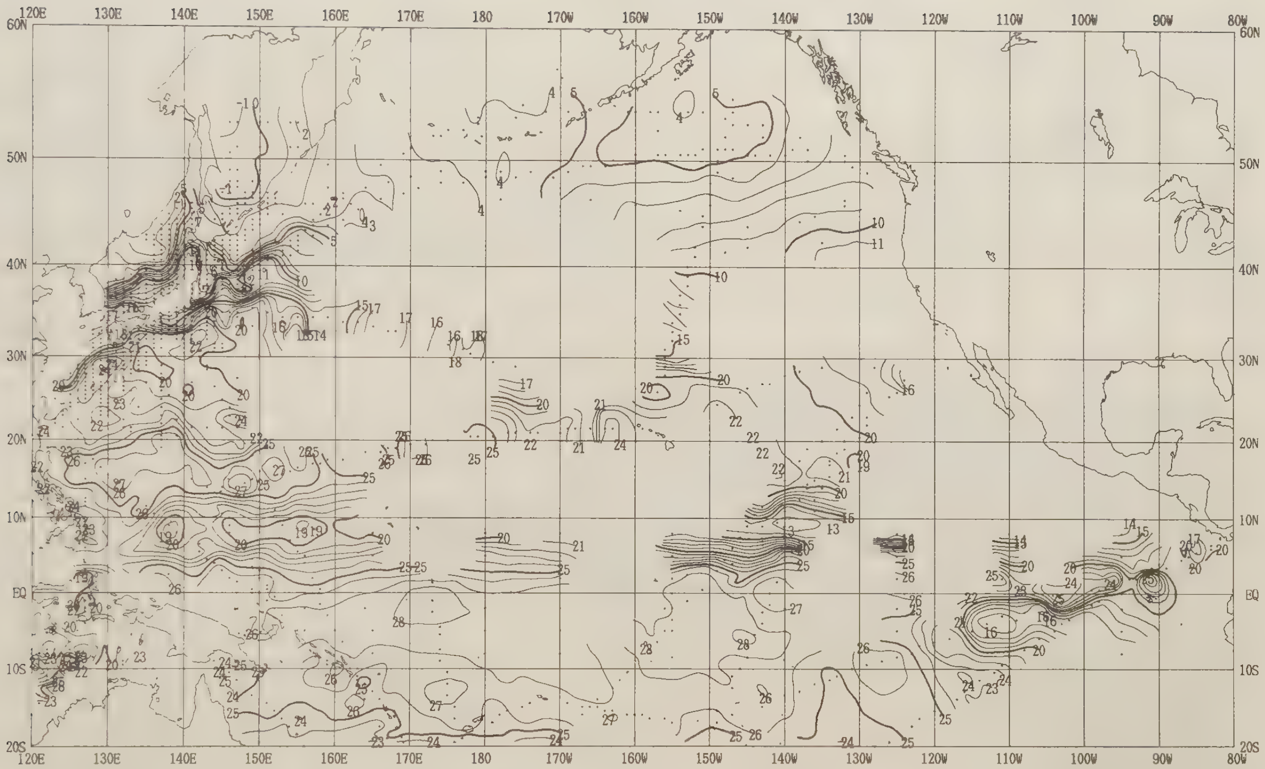

第15図　海洋気象ブイロボットによる観測要素の時系列図（東シナ海：22001）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the East China Sea (WMO ID No. 22001). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



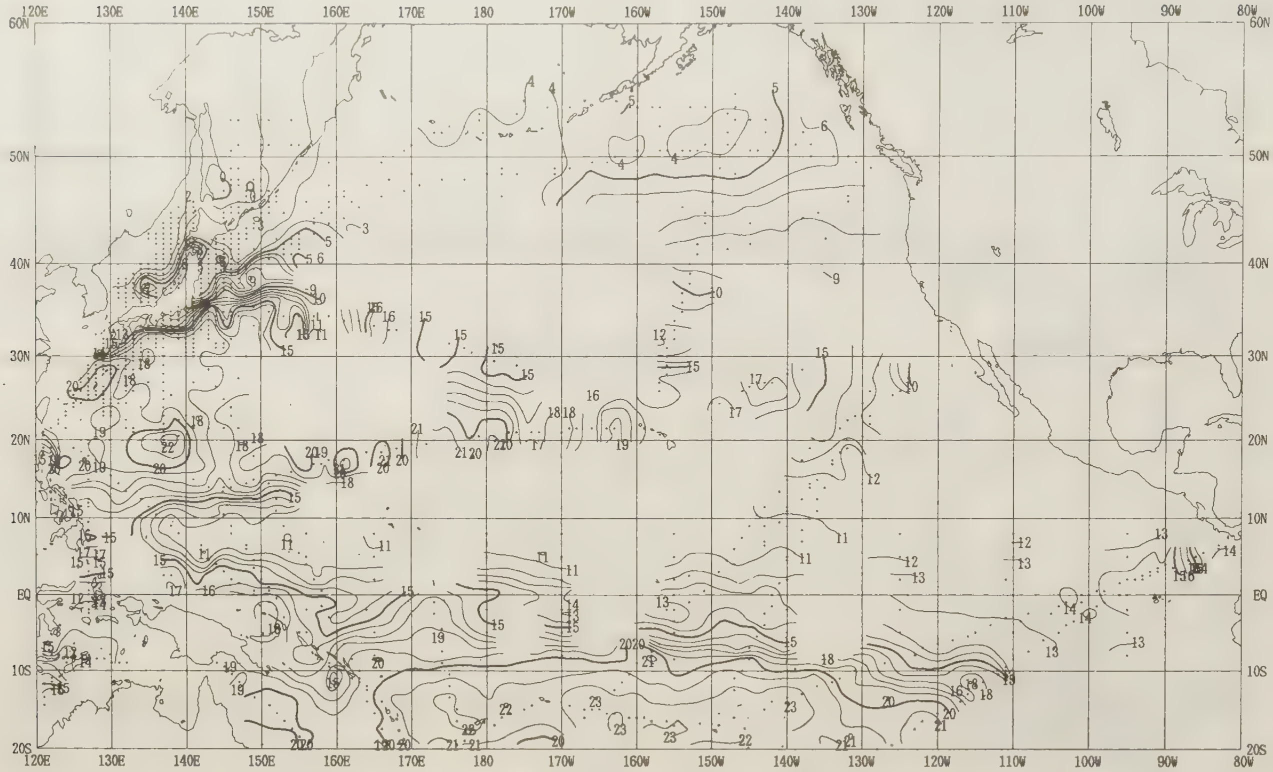

第16図　全球月平均海面水温図（上）及び偏差図（下）（1997年 7月）

Fig.16 Monthly mean sea surface temperature over the global ocean (top) and anomalies (bottom) for JUL 1997. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



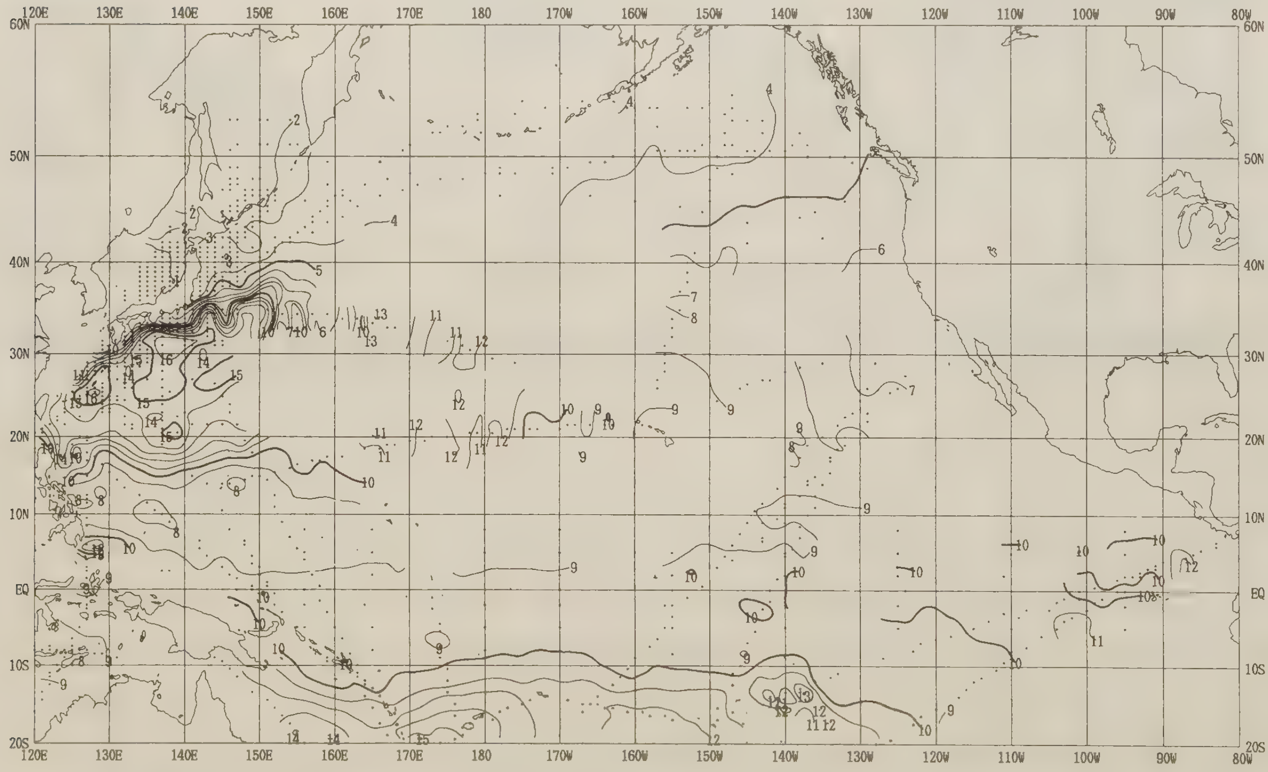

第17図　太平洋表層水温図(深さ100m)（1997年 7月）

Fig.17 Subsurface (100m) temperatures in the Pacific Ocean for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.



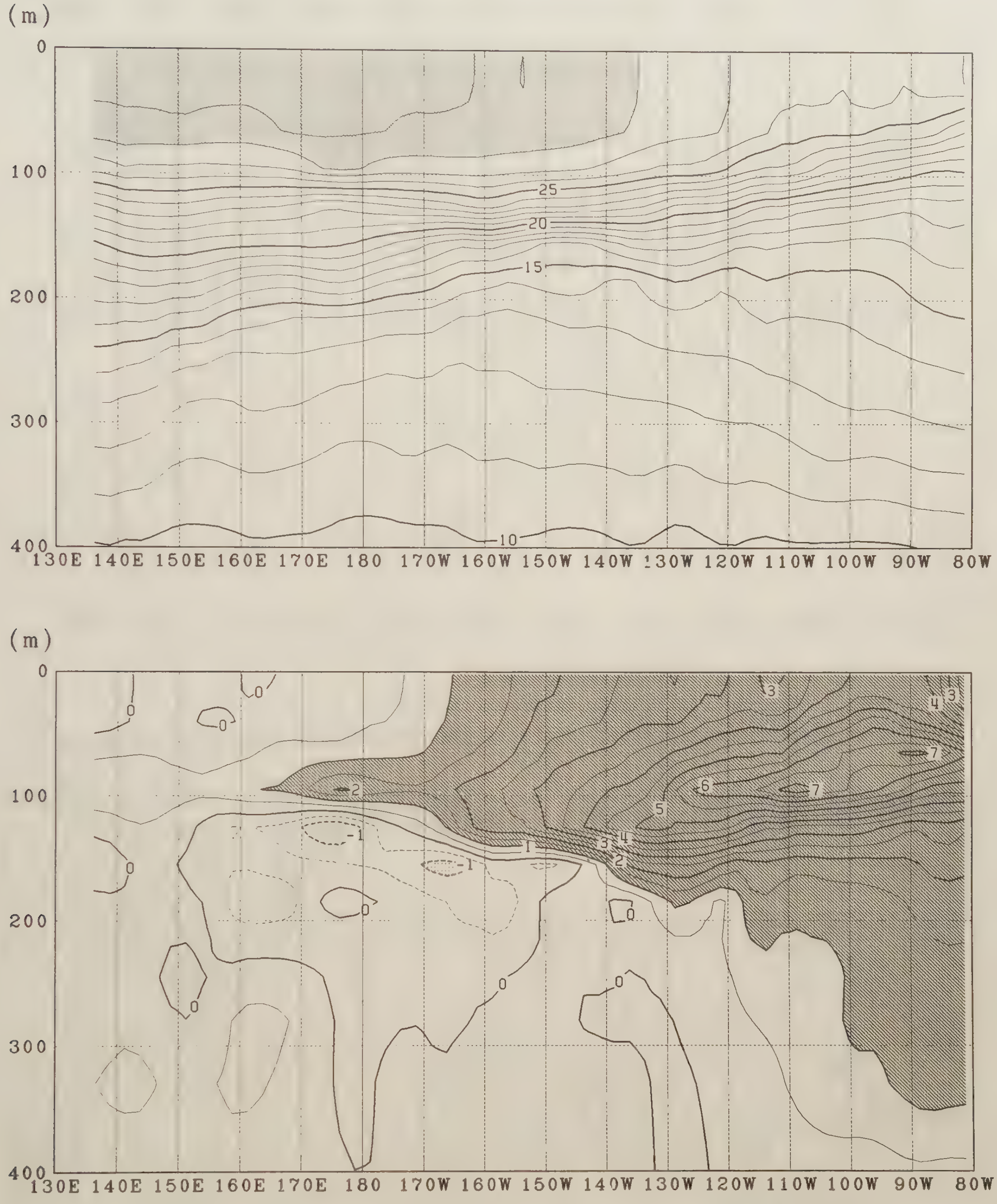
第18図　太平洋表層水温図(深さ200m) (1997年 7月)

Fig.18 Subsurface (200m) temperatures in the Pacific Ocean for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.



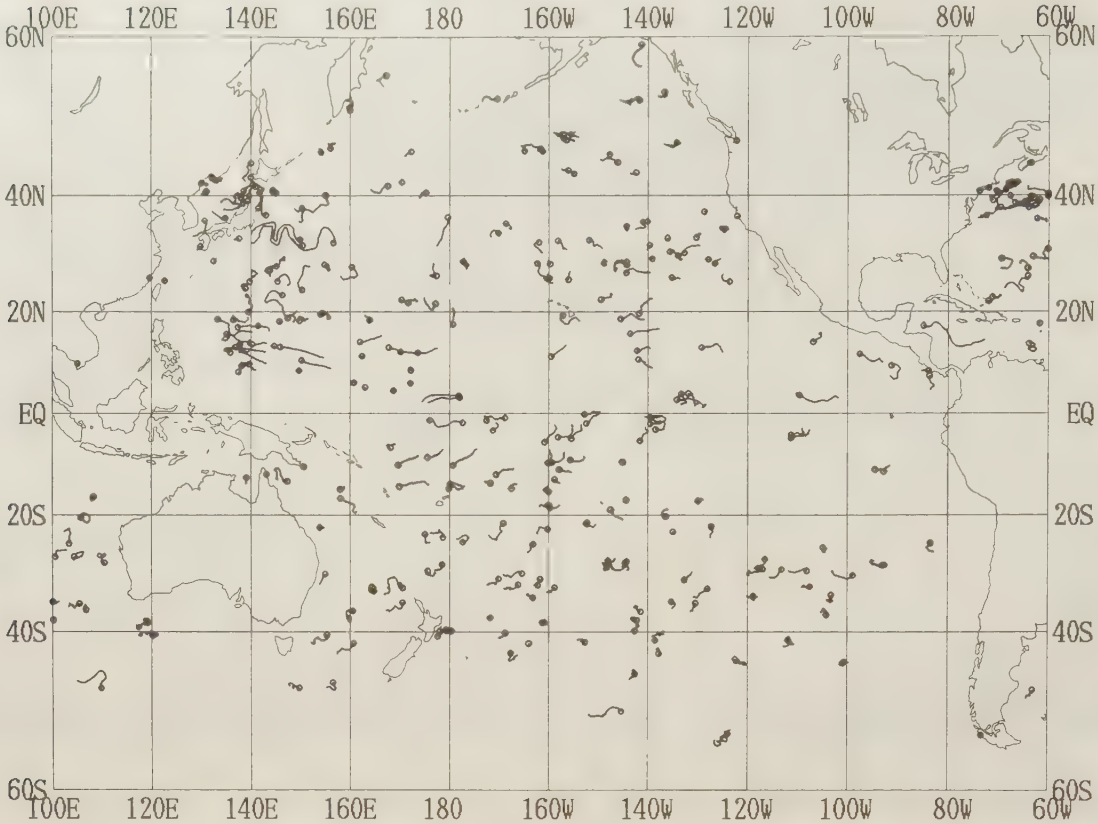
第19図　太平洋表層水温図(深さ400m) (1997年 7月)

Fig.19 Subsurface (400m) temperatures in the Pacific Ocean for JUL 1997. Contour interval is 1°C. Observation points are denoted by dots.



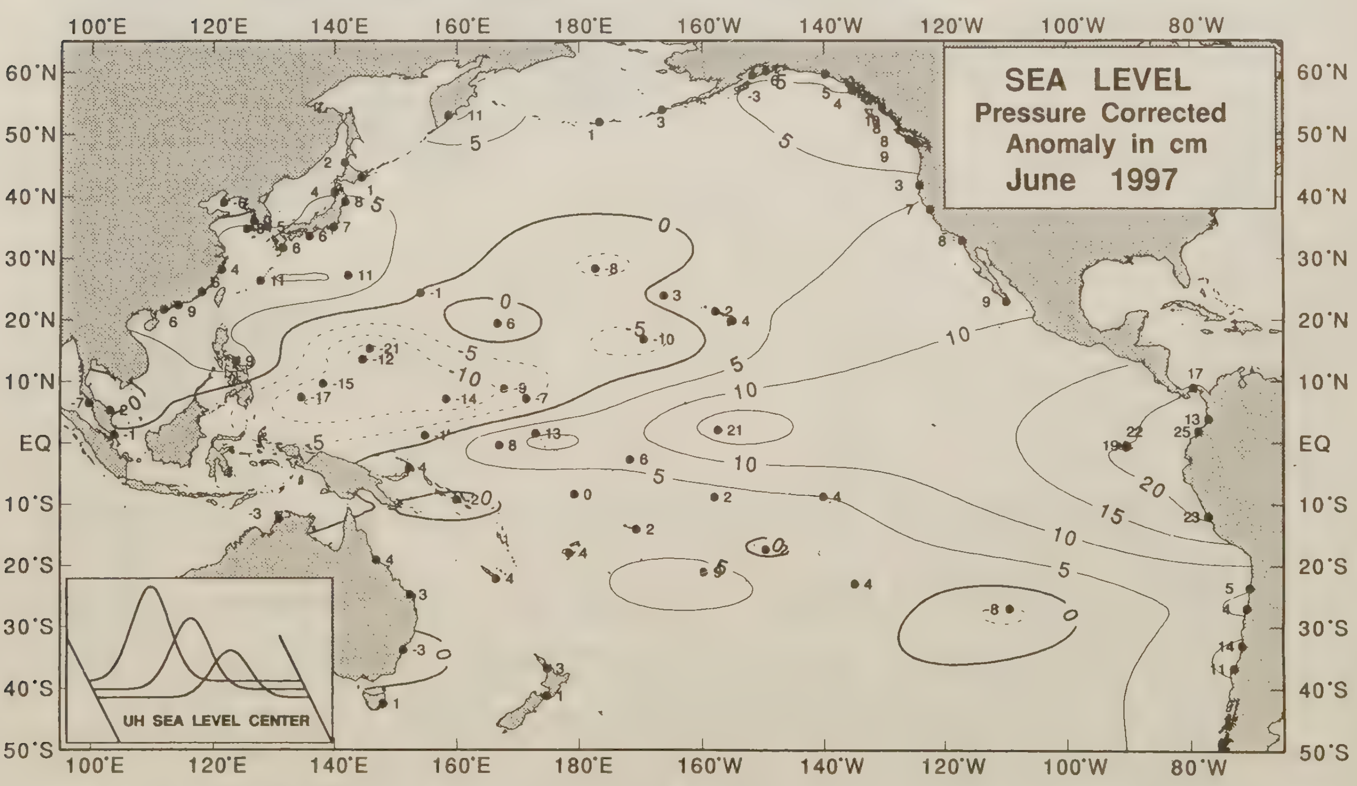

第20図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（1997年 7月）

Fig.20 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for JUL 1997. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-1995 base period means.



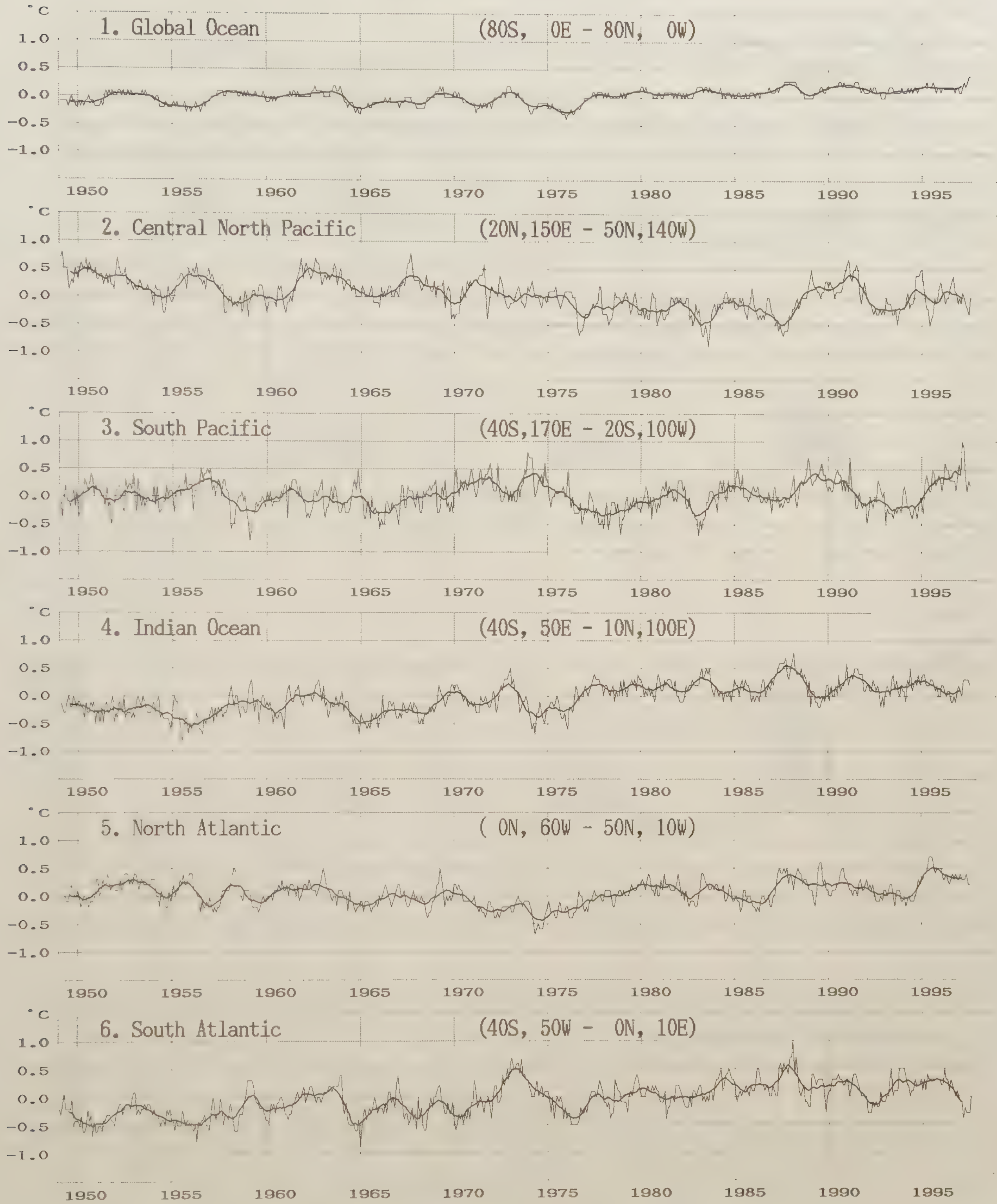

第21図　太平洋ブイ流跡図( 1997年 7月 )

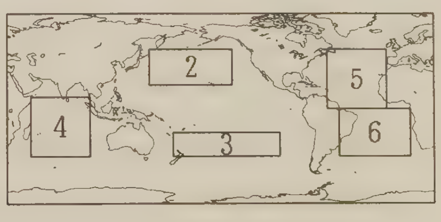
Fig.21 Movements of drifting buoys in the Pacific Ocean during JUL 1997. Each track is for one buoy. Small circles represent last positions for the month.




第22図　太平洋海面水位偏差図 ( 1997年 6月 )

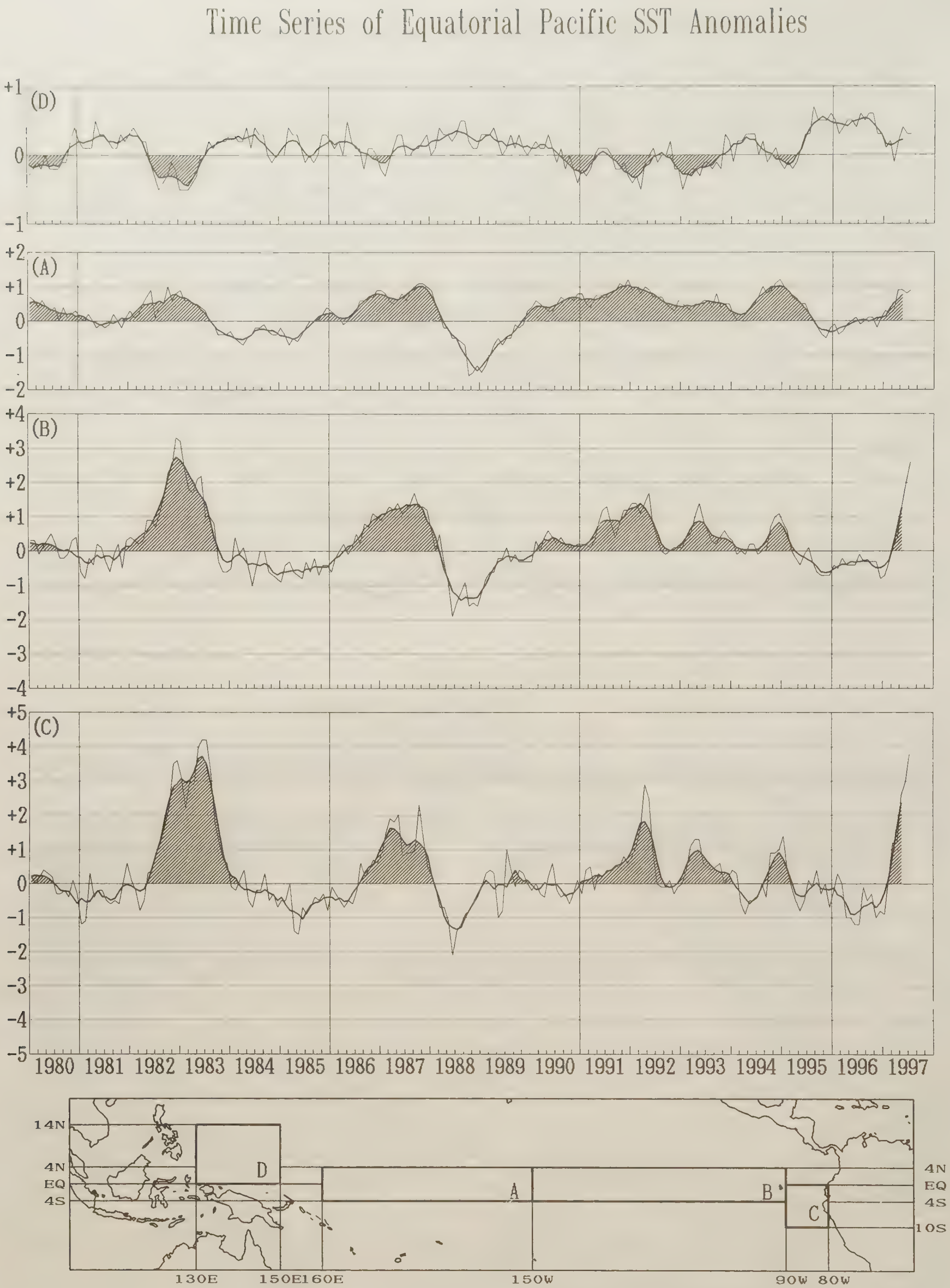
Fig.22 Monthly sea level anomalies for JUN 1997 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Dept. of Oceanography, Univ. of Hawaii.




第23図 海域平均海面水温偏差の長期変動

Fig.23 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1961-90). Thin lines show the monthly mean and thick lines their 13-month running means.



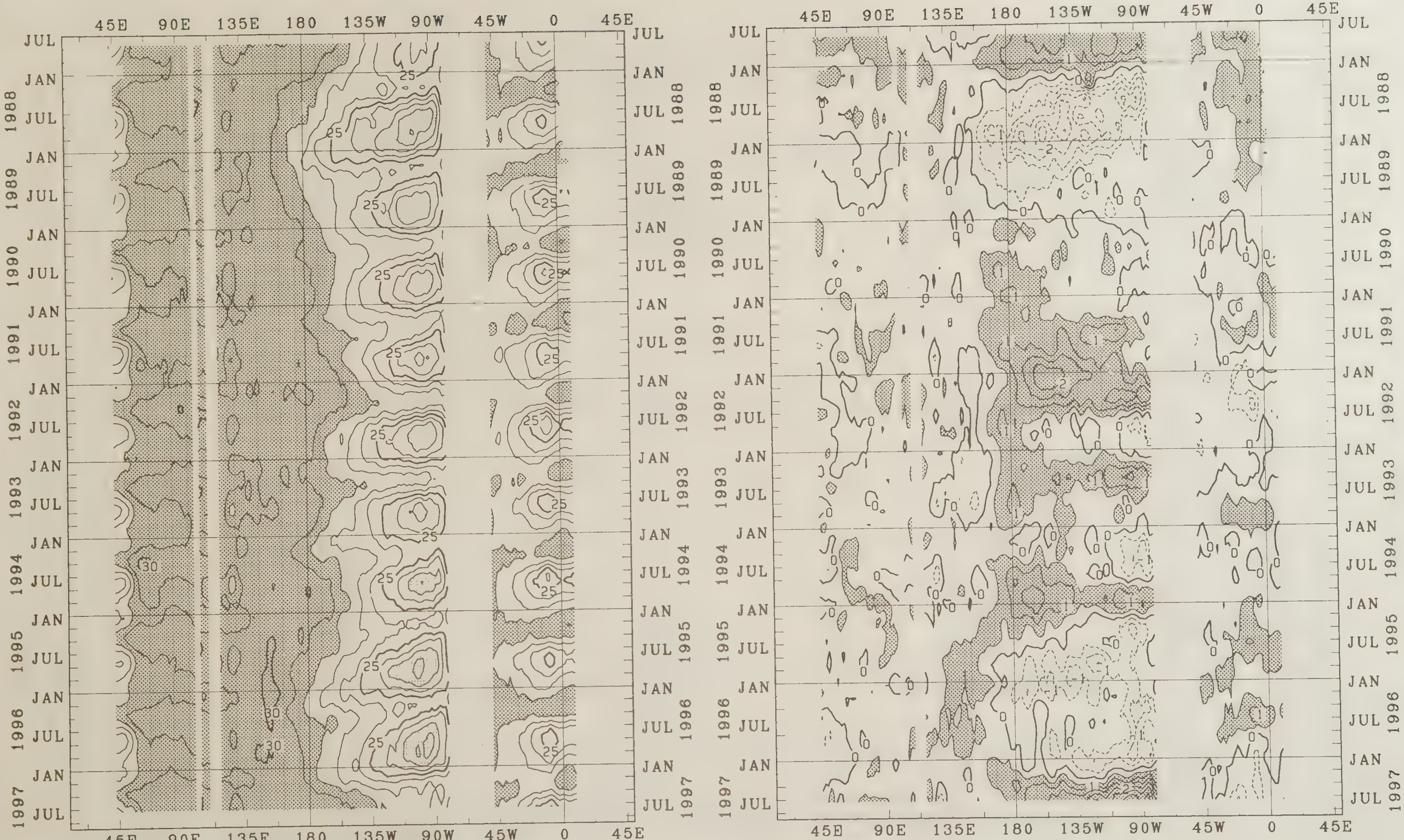

第24図　太平洋赤道域の海面水温偏差時系列図

Fig.24 Time series of monthly mean SST anomalies (°C) in the equatorial Pacific Ocean for the areas indicated at the bottom panel.
Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1961-1990).

| MONTH | SEA SURFACE TEMPERATURE AND ANOMALY (°C) | | | | | | | | SOI | SEA LEVEL PRESSURE ANOMALY (hPa) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | REGION D 14N-EQ 130E-150E | | REGION A 4N-4S 160E-150W | | REGION B 4N-4S 150W-90W | | REGION C EQ-10S 90W-80W | | SOI | TAHITI 17-33S 149-37W | DARWIN 12-24S 130-52E |
| JAN 95 | 28.3 | -0.2 | 29.0 | 1.0 | 26.2 | 0.8 | 25.7 | 1.4 | -0.4 | -0.3 | 0.6 |
| FEB 95 | 28.2 | -0.1 | 28.9 | 0.9 | 26.8 | 0.6 | 26.1 | 0.4 | -0.2 | 0.6 | 1.1 |
| MAR 95 | 28.2 | -0.2 | 28.8 | 0.7 | 26.9 | 0.0 | 25.8 | -0.1 | 0.4 | 0.3 | -0.5 |
| APR 95 | 28.7 | -0.1 | 28.8 | 0.6 | 26.9 | -0.2 | 24.6 | -0.5 | -1.4 | -1.6 | -0.0 |
| MAY 95 | 29.2 | 0.1 | 29.0 | 0.5 | 26.2 | -0.4 | 23.1 | -0.8 | -1.0 | -0.7 | 0.6 |
| JUN 95 | 29.6 | 0.3 | 29.0 | 0.5 | 26.0 | -0.1 | 22.2 | -0.5 | -0.1 | 0.3 | 0.4 |
| JUL 95 | 29.5 | 0.3 | 28.7 | 0.2 | 25.3 | 0.1 | 21.7 | 0.1 | 0.4 | 0.4 | -0.4 |
| AUG 95 | 29.8 | 0.7 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.0 | 0.4 | 0.3 |
| SEP 95 | 29.7 | 0.5 | 28.1 | -0.2 | 24.0 | -0.6 | 20.7 | 0.4 | 0.2 | 0.4 | -0.0 |
| OCT 95 | 29.8 | 0.5 | 28.0 | -0.4 | 23.9 | -0.7 | 20.4 | -0.3 | -0.3 | -0.7 | -0.5 |
| NOV 95 | 29.7 | 0.5 | 27.9 | -0.5 | 23.9 | -0.7 | 21.5 | 0.0 | 0.1 | 0.1 | -0.1 |
| DEC 95 | 29.5 | 0.6 | 28.0 | -0.2 | 24.2 | -0.7 | 21.9 | -0.7 | -0.5 | -0.9 | 0.0 |
| JAN 96 | 29.0 | 0.5 | 27.9 | -0.1 | 25.0 | -0.4 | 24.1 | -0.2 | 0.8 | 1.0 | -0.7 |
| FEB 96 | 28.6 | 0.3 | 27.6 | -0.4 | 25.7 | -0.5 | 26.0 | 0.3 | 0.1 | -0.2 | -0.5 |
| MAR 96 | 28.8 | 0.4 | 27.8 | -0.3 | 26.7 | -0.2 | 25.9 | 0.0 | 0.7 | 1.0 | -0.3 |
| APR 96 | 29.3 | 0.5 | 28.1 | -0.1 | 26.7 | -0.4 | 24.1 | -1.0 | 0.8 | 0.5 | -0.5 |
| MAY 96 | 29.6 | 0.5 | 28.5 | 0.0 | 26.2 | -0.4 | 22.9 | -1.0 | 0.3 | 1.2 | 1.2 |
| JUN 96 | 29.7 | 0.4 | 28.6 | 0.1 | 25.7 | -0.4 | 21.5 | -1.2 | 1.4 | 1.6 | -0.2 |
| JUL 96 | 29.8 | 0.6 | 28.4 | -0.1 | 25.1 | -0.1 | 20.4 | -1.2 | 0.7 | 0.6 | -0.6 |
| AUG 96 | 29.6 | 0.5 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.4 | 0.4 | -0.3 |
| SEP 96 | 29.8 | 0.6 | 28.4 | 0.1 | 24.3 | -0.3 | 19.8 | -0.5 | 0.5 | -0.7 | -1.7 |
| OCT 96 | 29.9 | 0.6 | 28.5 | 0.1 | 24.3 | -0.3 | 20.4 | -0.3 | 0.4 | -0.1 | -0.8 |
| NOV 96 | 29.5 | 0.3 | 28.2 | -0.2 | 24.3 | -0.3 | 20.5 | -1.0 | -0.0 | -0.5 | -0.5 |
| DEC 96 | 29.2 | 0.3 | 28.3 | 0.1 | 24.1 | -0.8 | 21.8 | -0.8 | 0.8 | -0.3 | -1.9 |
| JAN 97 | 28.6 | 0.1 | 28.3 | 0.3 | 24.7 | -0.7 | 23.4 | -0.9 | 0.3 | 1.7 | 0.9 |
| FEB 97 | 28.5 | 0.2 | 28.2 | 0.2 | 25.9 | -0.3 | 25.9 | 0.2 | 1.2 | 1.0 | -1.9 |
| MAR 97 | 28.3 | -0.1 | 28.4 | 0.3 | 27.0 | 0.1 | 27.1 | 1.2 | -0.6 | -0.5 | 0.9 |
| APR 97 | 29.0 | 0.2 | 29.1 | 0.9 | 27.5 | 0.4 | 26.3 | 1.2 | -1.1 | 0.4 | 2.3 |
| MAY 97 | 29.5 | 0.4 | 29.4 | 0.9 | 27.9 | 1.3 | 26.5 | 2.6 | -2.5 | -2.1 | 0.9 |
| JUN 97 | 29.6 | 0.3 | 29.3 | 0.8 | 28.1 | 2.0 | 25.7 | 3.0 | -2.3 | -0.8 | 2.1 |
| JUL 97 | 29.5 | 0.3 | 29.4 | 0.9 | 27.8 | 2.6 | 25.5 | 3.9 | -0.8 | -0.1 | 1.2 |

第1表　エルニーニョ監視指数

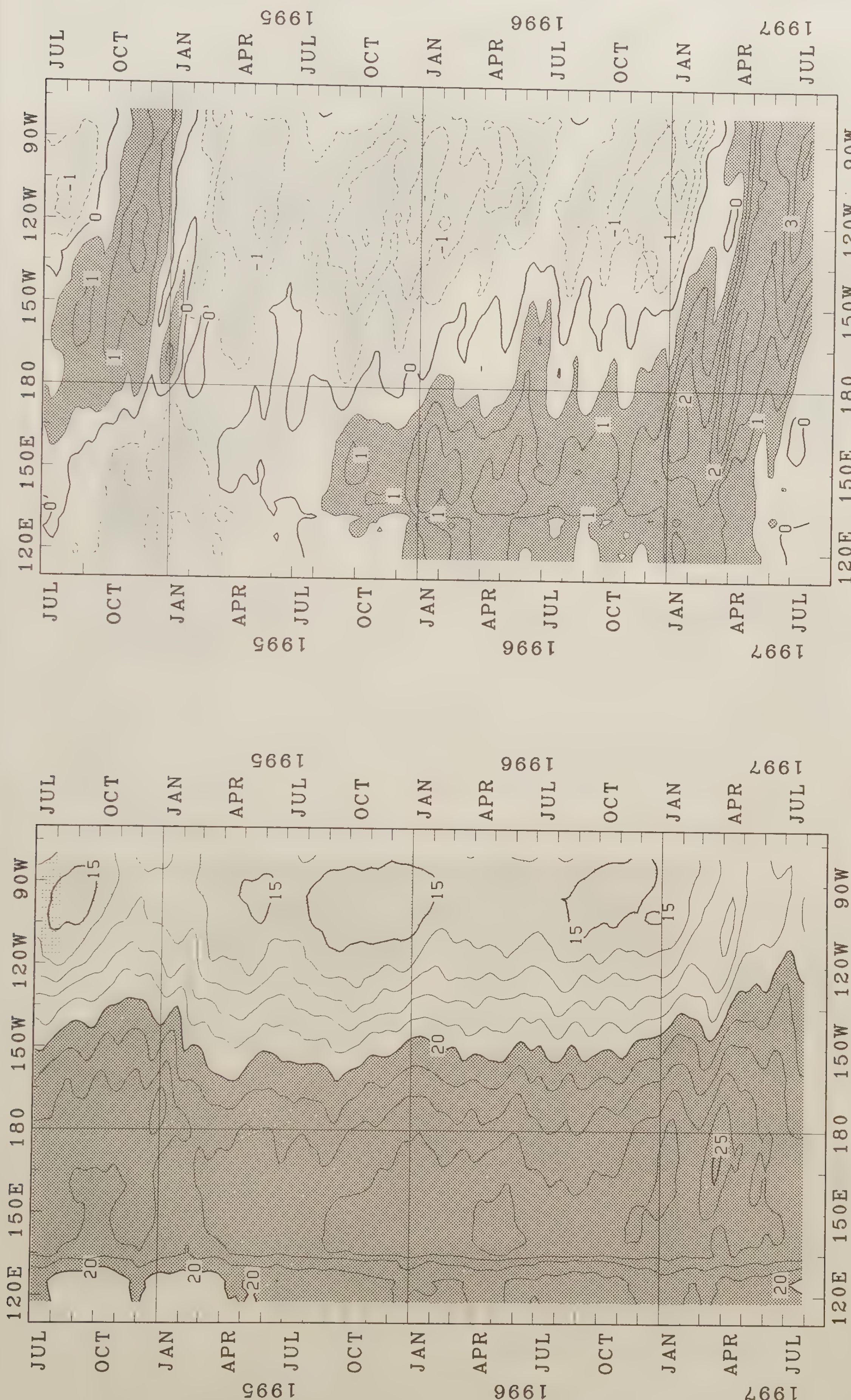
Table 1　El Nino Monitoring indices




第 25 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

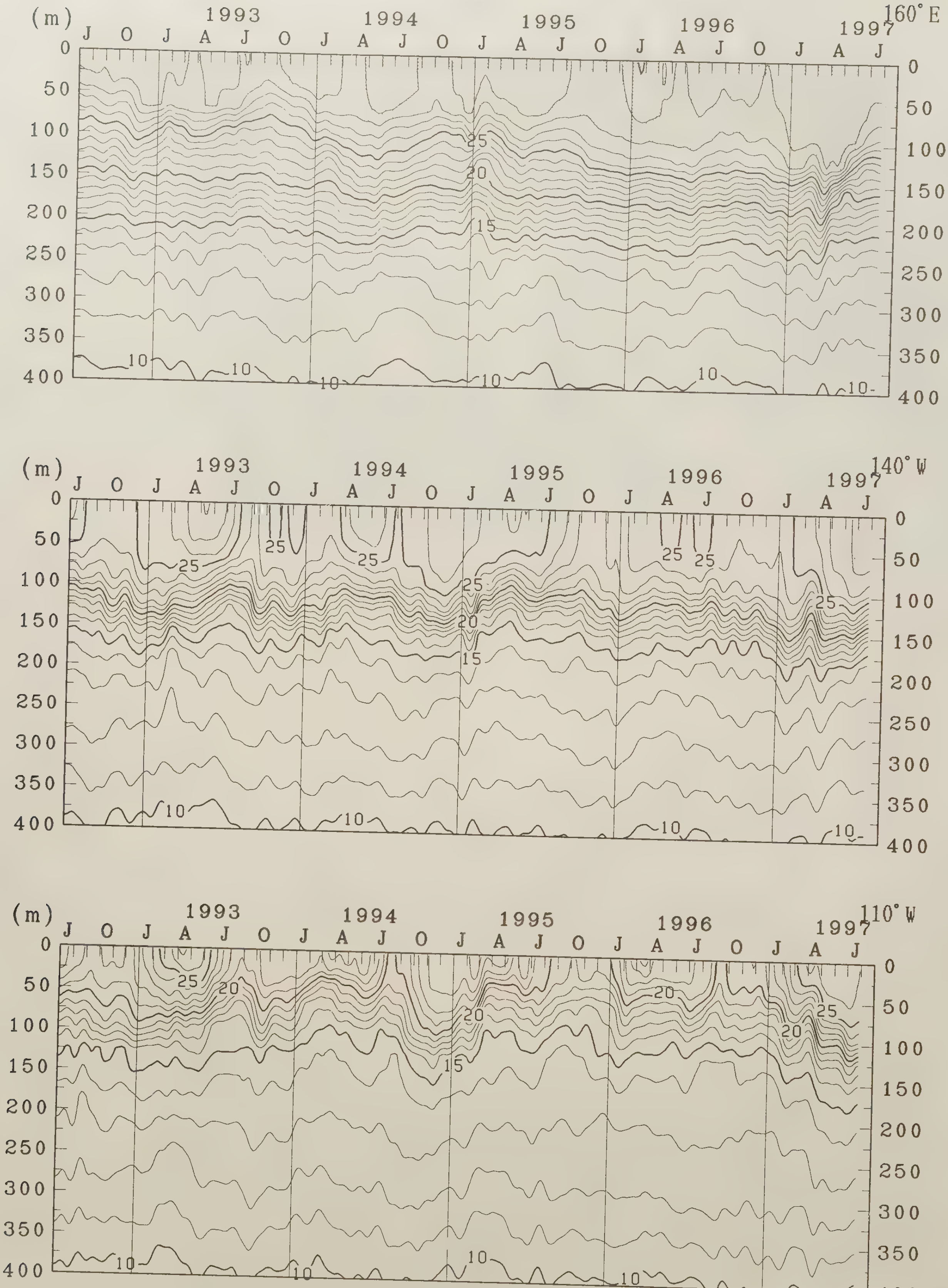
Fig.25 Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1961-1990 base period means.

Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)



第26図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

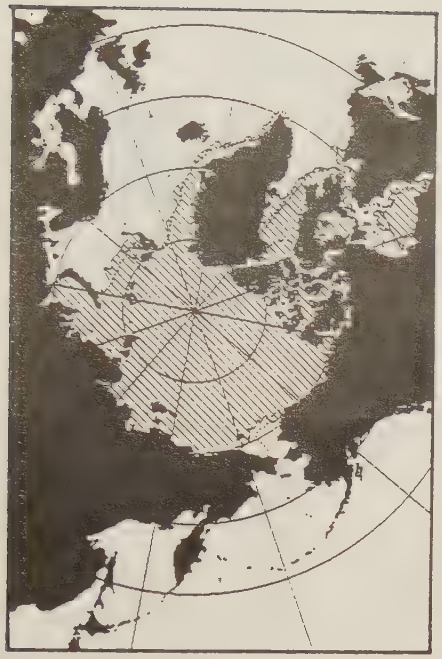
Fig.26 Time-longitude sections of ocean heat content in the upper 260m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-1995 base period means.




第27図　太平洋赤道域の表層水温の時間－深度断面図

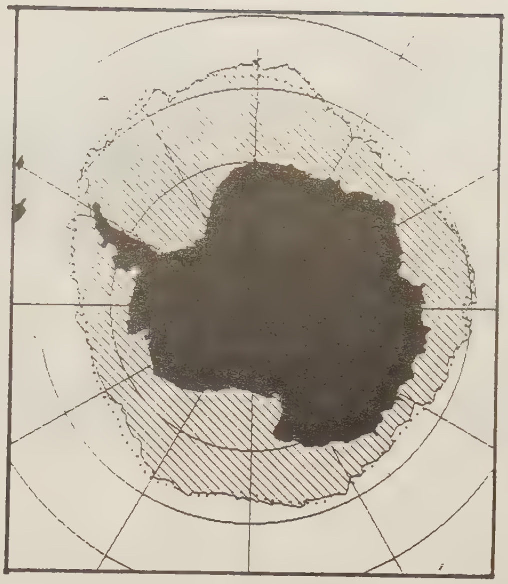
(上：西部、中：中部、下：東部)

Fig.27 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.



第28-1図　北極域の海氷図（1997年 7月16日）

Fig. 28-1　Sea ice chart in the Arctic on 16 JULY 1997. The area hatched represents the sea ice extent.　The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.　The data source is the U.S. National Ice Center (USA).



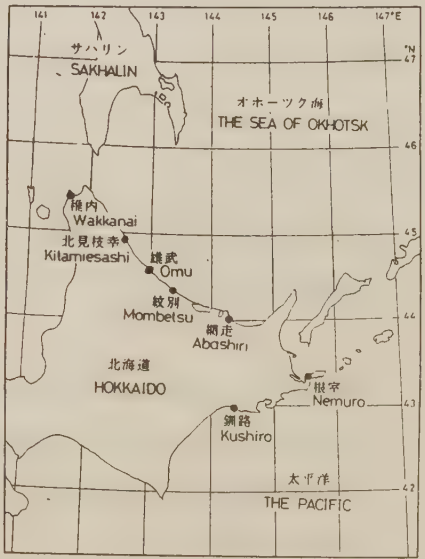
第28-2図　南極域の海氷図（1997年 7月16日）

Fig. 28-2　Sea ice chart in the Antarctic on 16 JULY 1997. The area hatched represents the sea ice extent.　The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.　The data source is the U.S. National Ice Center (USA).

第28-1表　流氷に関する初終日（1996年12月から1997年５月まで）
Table 28-1.　First and last dates of drift ice at coastal stations (From December 1996 to May 1997).

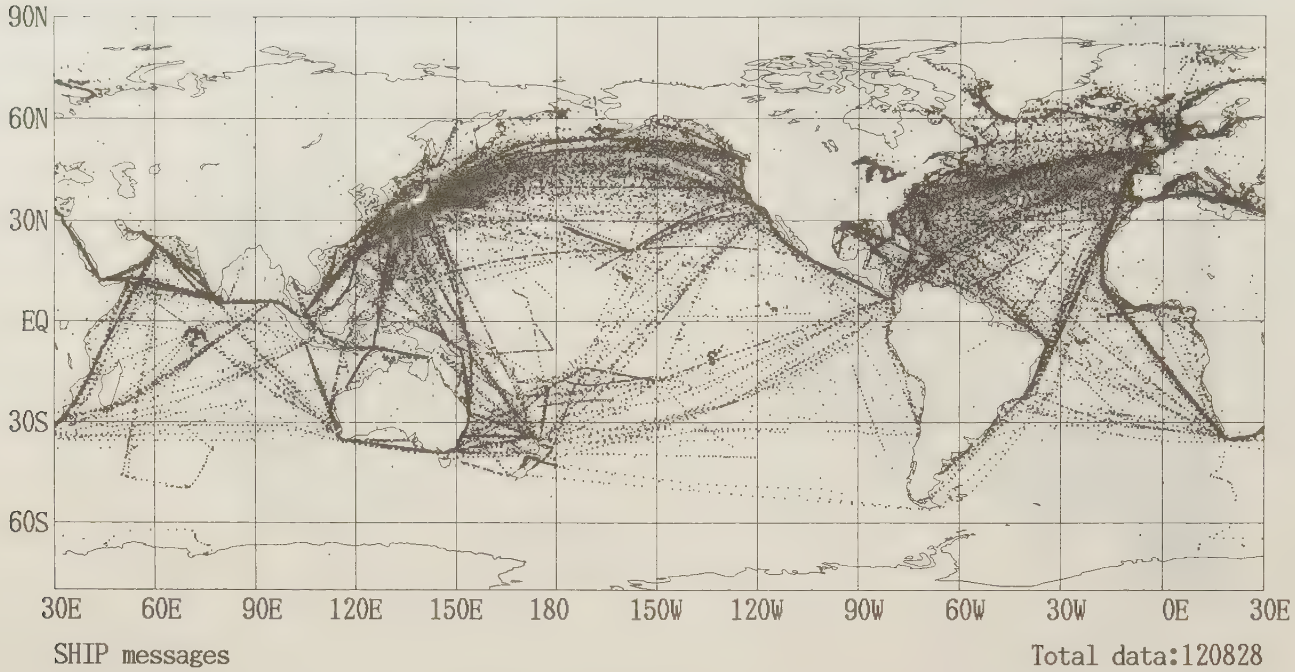
| 地点 Station | 流氷 Drift ice 初日 First date | 終日 Last date | 期間 Period | 日数 Days | 接岸初日 First date of drift ice on shore | 海明け First date of shore lead appearance |
|---|---|---|---|---|---|---|
| 稚内 WAKKANAI | —— | —— | — | 0(-15) | —— | * |
| 北見枝幸 KITAMIESASHI | 2.04(+15) | 3.16(-15) | 41(-30) | 20(-32) | 2.22(+26) | 2.24(-17) |
| 雄武 OMU | 2.04(+16) | 3.18(-19) | 43(-35) | 27(-34) | 2.15(+18) | 2.25(-17) |
| 紋別 MOMBETSU | 1.23( +5) | 3.20(-18) | 57(-23) | 39(-25) | 2.12(+13) | 3.01(-16) |
| 網走 ABASHIRI | 1.24( +7) | 3.29(-20) | 65(-27) | 63(-20) | 1.31( +3) | 3.07(-17) |
| 根室 NEMURO | 2.03( -6) | 3.26( -7) | 52( -1) | 31( -3) | 2.24(+10) | * |
| 釧路 KUSHIRO | —— | —— | — | * | —— | * |

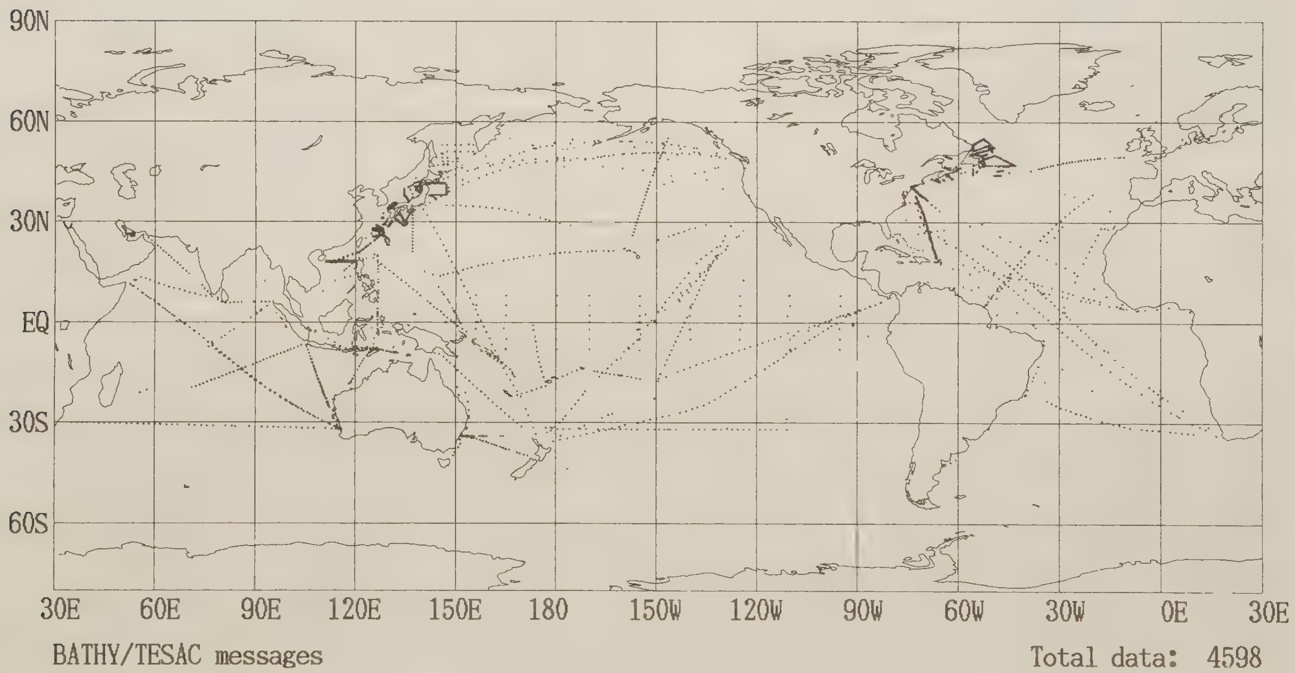
() : deviation from normal for the period from 1961 to 1990
＋ : earlier or more than normal
— : later or less than normal
* : no observations ,　— : no phenomenon




第28-3図　沿岸海氷観測地点地図

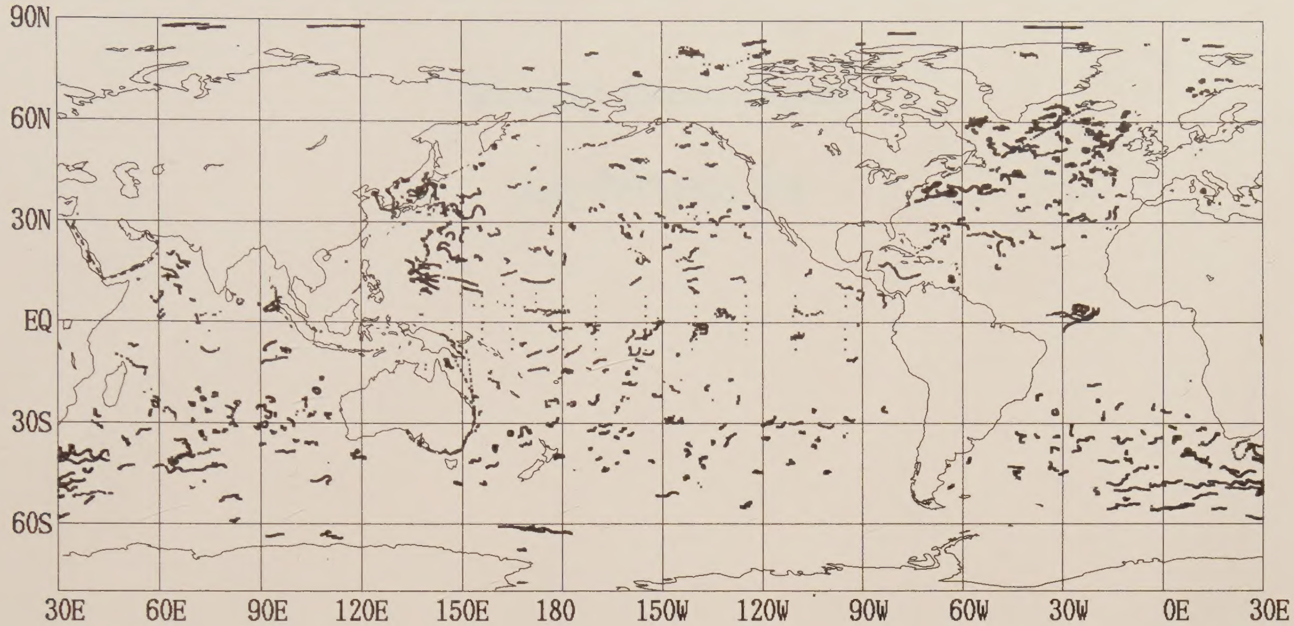
Fig. 28-3　Map of the coastal stations

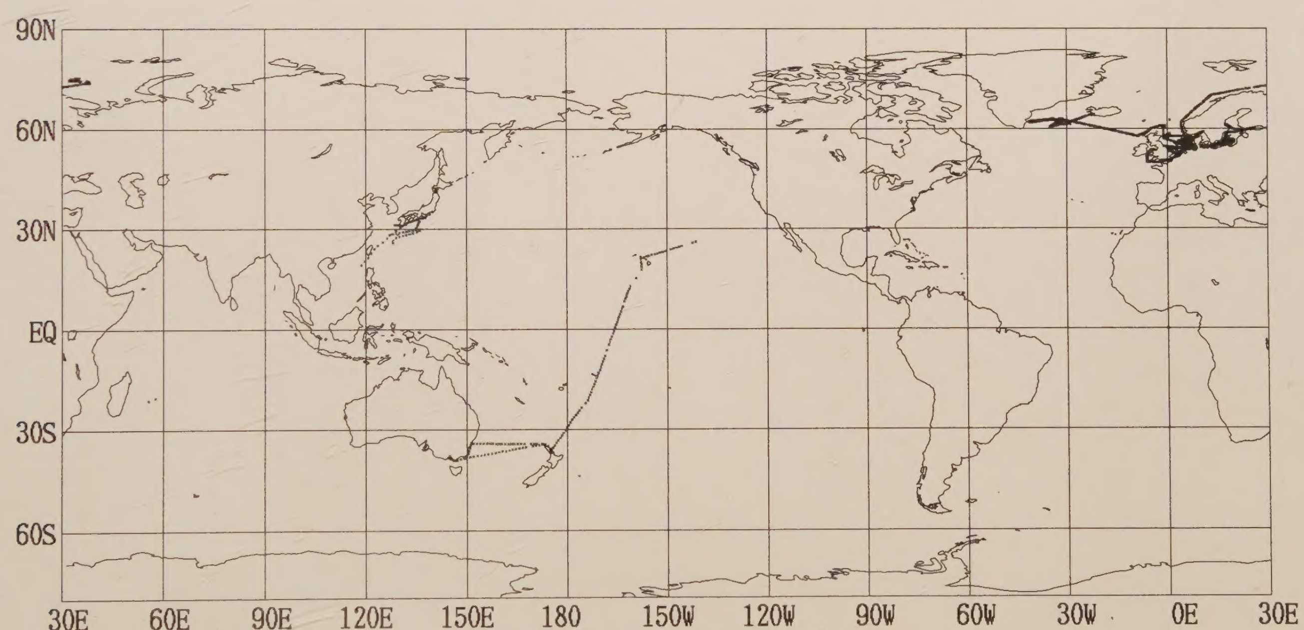



第29-1図　測点分布図(1997年 7月)

Fig.29-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for JUL 1997.




第29-2図　測点分布図(1997年 7月)

Fig.29-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for JUL 1997.

# 気 象 庁 海 洋 月 報

## Monthly Ocean Report

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